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BLM



# FINAL

## SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT for the Alpine Satellite Development Plan for the Proposed Greater Mooses Tooth One Development Project

### Volume 2: Chapter 7

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v.2  
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2014

Cooperating Agencies:

U.S. Department of Energy • U.S. Environmental Protection Agency • U.S. Fish and Wildlife Service  
U.S. Army Corps of Engineers, Alaska District • State of Alaska • North Slope Borough • Native Village of Nuiqsut

Alaska





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1

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3

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## Cover Photos:

1. Aerial of Blackfish Creek downstream from GMT1 Drilling pad, National Petroleum Reserve in Alaska.
2. Caribou, North Slope, Alaska
3. Ice road construction, National Petroleum Reserve in Alaska.
4. Aerial of production pad, North Slope, Alaska.

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# **Alpine Satellite Development Plan GMT1 Development Project**

**Final**

## **Supplemental Environmental Impact Statement**

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### **Volume 2: Chapter 7 Maps**

Prepared by:

U.S. Department of the Interior  
Bureau of Land Management  
Anchorage, Alaska

In cooperation with:

U.S. Army Corps of Engineers  
U.S. Environmental Protection Agency  
U.S. DOI Fish and Wildlife Service  
U.S. DOI Bureau of Ocean Energy Management  
State of Alaska  
Native Village of Nuiqsut  
North Slope Borough

October 2014

THE UNIVERSITY OF CHICAGO  
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TO THE EDITOR OF THE JOURNAL OF THE AMERICAN CHEMICAL SOCIETY  
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# Contents of Volume 2

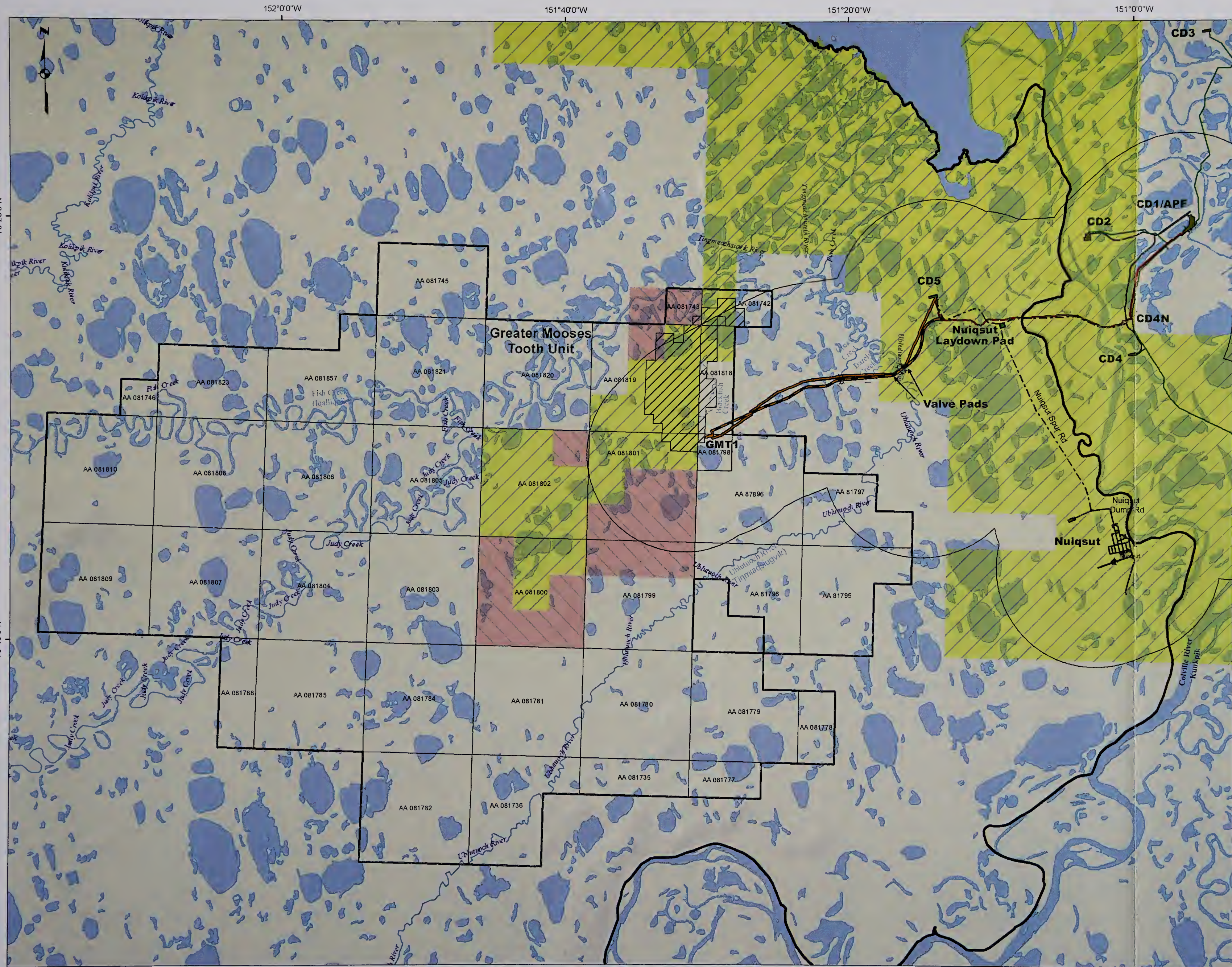
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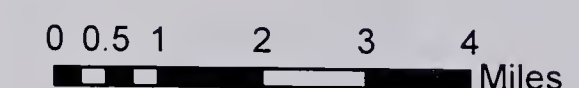


Map 1.1-1  
Greater Mooses Tooth and  
CPAI Proposed Project

- |  |   |
|--|---|
| <b>DSEIS<br/>Proposed<br/>Infrastructure</b>   | <b>Proposed or Permitted<br/>(not part of GMT1)</b> |
| — Road   | — Pipeline  |
| — Pipeline                                     | — Road  |
| ■ Facility                                     | ■ Facility  |
| — 14 inch Water <sup>1</sup><br>Injection Line | — Existing<br>Pipeline                              |
| — Bridge                                       | — Road  |
| — Boundary                                     | — Facility  |
| Lookout PA                                     | Surface Land<br>Ownership                           |
| Project Study<br>Area                          | Conveyed  |
| Unit Boundary                                  | Selected  |
| Lease Tracts                                   |   |
| NPR-A  |   |

Footnote:  
1: 14 inch Water Injection line from CD1/APF to CD4N will be  
constructed on a new pipe rack. From CD4N to CD5 the 14-inch  
Water Injection line will be placed on the already proposed or  
permitted pipe rack (not part of GMT1 ).  
2: Background layer is from Delorme World Imagery 2013

Date: 10/20/2014



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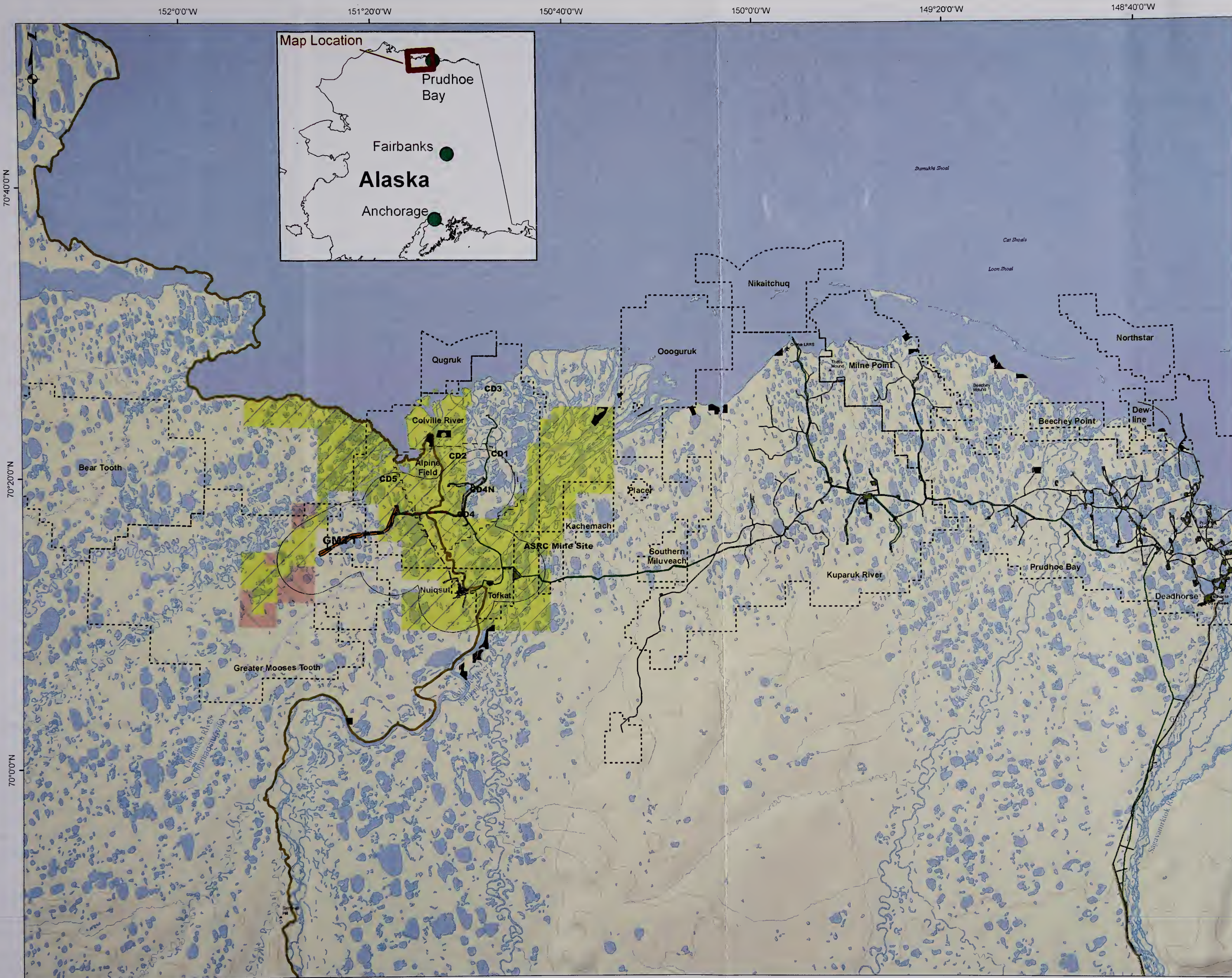
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Map 2.5-1

GMT1 Project Vicinity

DSEIS Proposed Infrastructure

- Road
- Pipeline
- Facility
- 14 inch Water<sup>1</sup> Injection Line
- Bridge

Proposed or Permitted (not part of GMT1)

- Pipeline
- Road
- Facility
- Existing Pipeline
- Road
- Facility

Boundary

- Project Study Area
- Oil & Gas Unit
- NPR-A

Surface Land Ownership

- Conveyed
- Selected

Native Allotments

- Private

Footnote:

1: 14 inch Water Injection line from CD1/APF to CD4N will be constructed on a new pipe rack. From CD4N to CD5 the 14-inch Water Injection line will be placed on the already proposed or permitted pipe rack (not part of GMT1).

2: Background layer is from Delorme World Imagery 2013.

Date: 10/20/2014

0 2 4 8 12 Miles

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151°40'0"W

151°20'0"W

151°0'0"W

70°20'0"N

70°10'0"N



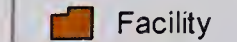
70°20'0"N

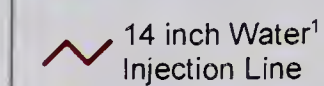
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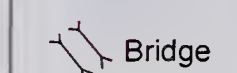
Map 2.5-2

# Alternative A: CPAI Proposed Project Layout

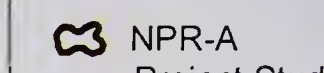
## Alternative A Infrastructure

-  Road
-  Pipeline
-  Facility

-  14 inch Water<sup>1</sup> Injection Line

-  Bridge

## Boundaries

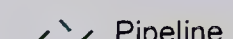
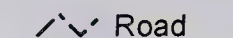
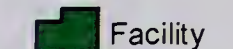
-  NPR-A Project Study Area

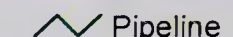
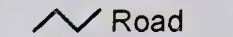
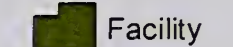
## Setback Areas



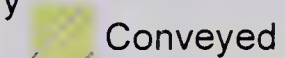
Fish Creek 3mi  
Ublutuooh River 0.5mi

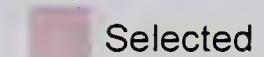
## Proposed or Permitted (not part of GMT1)

-  Pipeline
-  Road
-  Facility

- Existing
-  Pipeline
-  Road
-  Facility

- Surface Land Ownership
- Kuukpik Lands

-  Conveyed

-  Selected

Footnote:  
1: 14 inch Water Injection line from CD1/APF to CD4N will be constructed on a new pipe rack. From CD4N to CD5 the 14-inch Water Injection line will be placed on the already proposed or permitted pipe rack (not part of GMT1).

Date: 9/26/2014

0 0.5 1 2 3 Miles

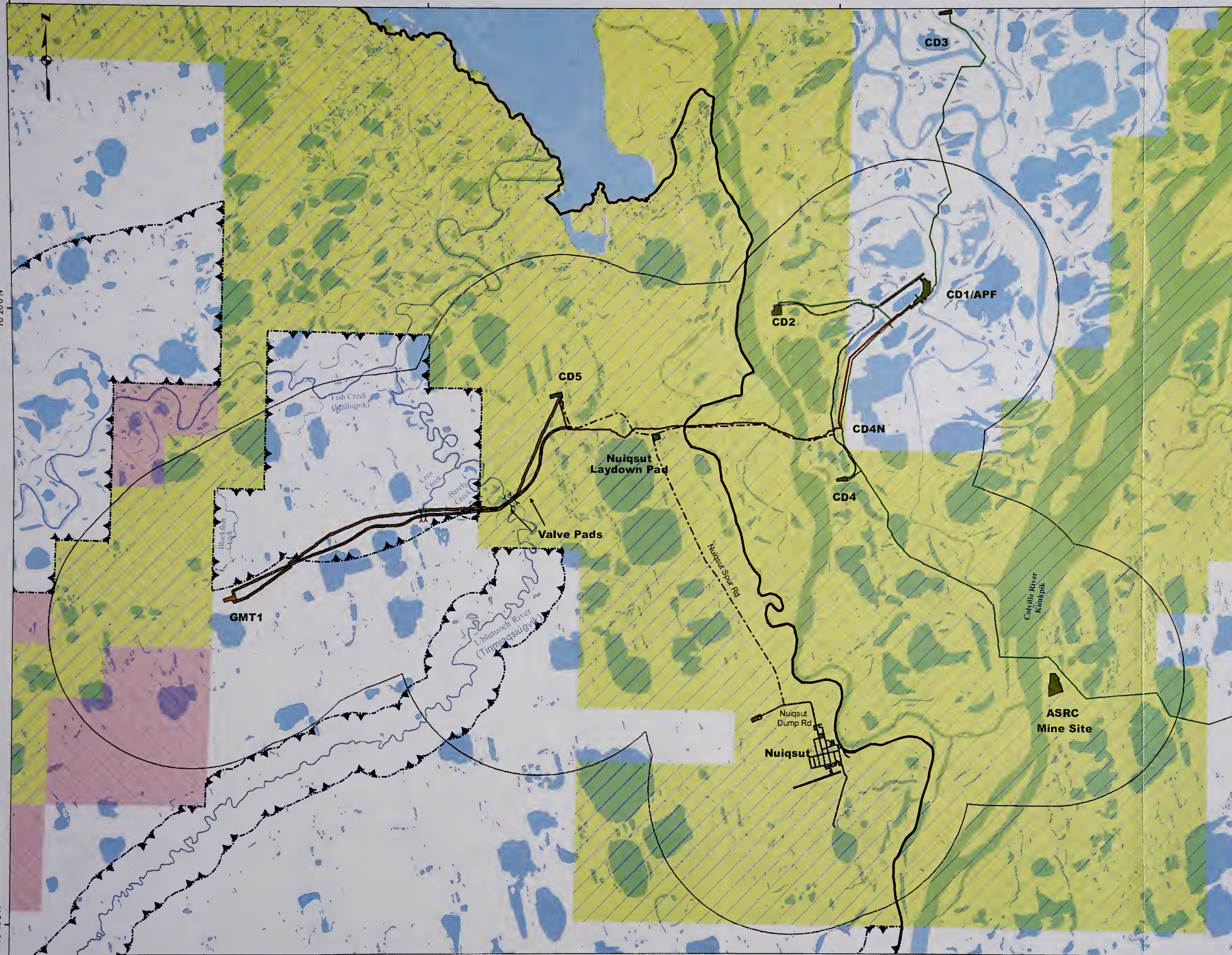
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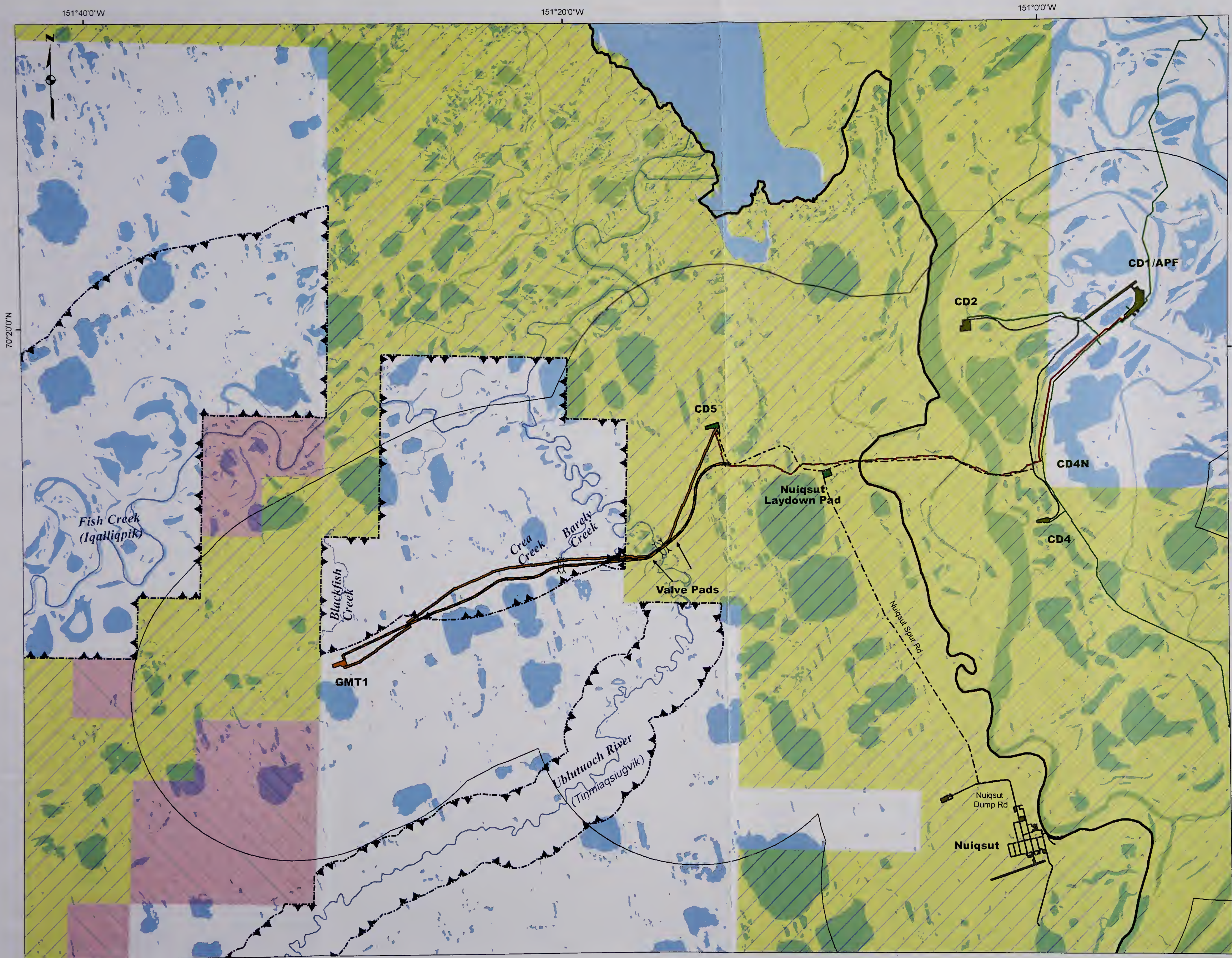


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Map 2.5-3

# Fish Creek and Tinmiasigvik (Ublutuocho) River Setback Areas

- |   |  |
|---|--|
| Alternative A Infrastructure              | Proposed or Permitted (not part of GMT1) |
| Road                                      | Pipeline                                 |
| Pipeline                                  | Road                                     |
| Facility                                  | Facility                                 |
| 14 inch Water <sup>1</sup> Injection Line | Existing                                 |
| Bridge                                    | Pipeline                                 |
|   | Road                                     |
|   | Facility                                 |
| Boundaries                                | Surface Land Ownership                   |
| NPR-A                                     | Kuukpik Lands                            |
| Project Study Area                        | Conveyed                                 |
|   | Selected                                 |
| Setback Areas                             |  |
| Fish Creek 3mi                            |  |
| Ublutuocho River 0.5mi                    |  |

Footnote:  
1: 14 inch Water Injection line from CD1/APF to CD4N will be constructed on a new pipe rack. From CD4N to CD5 the 14-inch Water Injection line will be placed on the already proposed or permitted pipe rack (not part of GMT1 ).  
2: Background layer is from Delorme World Imagery 2013

Date: 10/21/2014



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151°40'0"W

151°20'0"W

151°0'0"W

70°20'0"N

70°10'0"N

70°20'0"N

70°10'0"N

Map 2.5-4

Alternative A:  
CPAI Proposed  
Project Ice Roads

Alternative A Infrastructure

Road

Pipeline

Facility

14 inch Water<sup>1</sup> Injection Line

Bridge

Proposed or Permitted (not part of GMT1)

Pipeline

Road

Facility

Existing

Pipeline

Road

Facility

Alternative A Ice Roads

First Year

Second Year

Annual resupply Route

Boundaries

NPR-A

Project Study Area

Setback Areas

Fish Creek 3mi

Ublutuoch River 0.5mi

Footnote:

1: 14 inch Water Injection line from CD1/APF to CD4N will be constructed on a new pipe rack. From CD4N to CD5 the 14-inch Water Injection line will be placed on the already proposed or permitted pipe rack (not part of GMT1).


Date: 10/20/2014

0 0.5 1 2 3

Miles

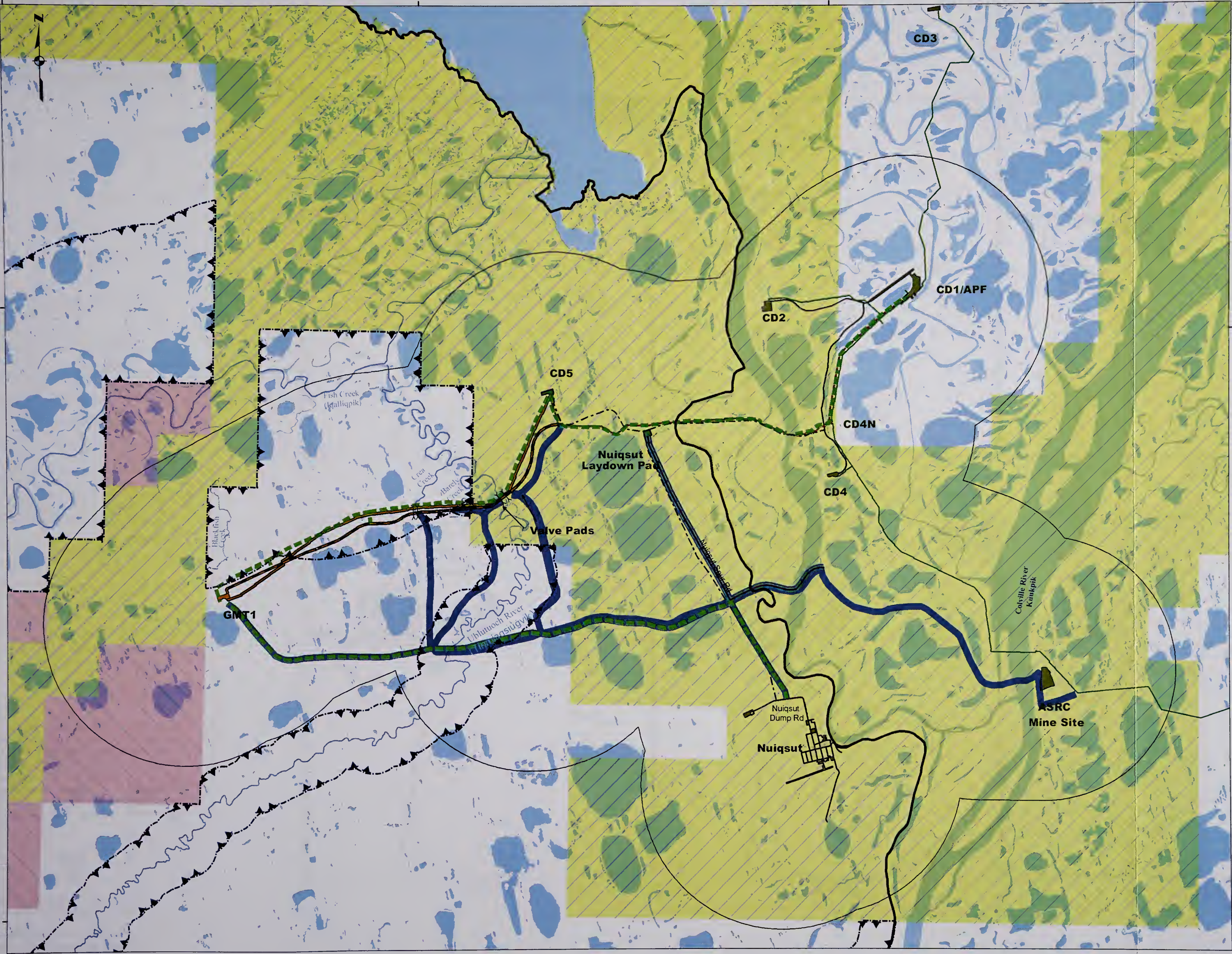
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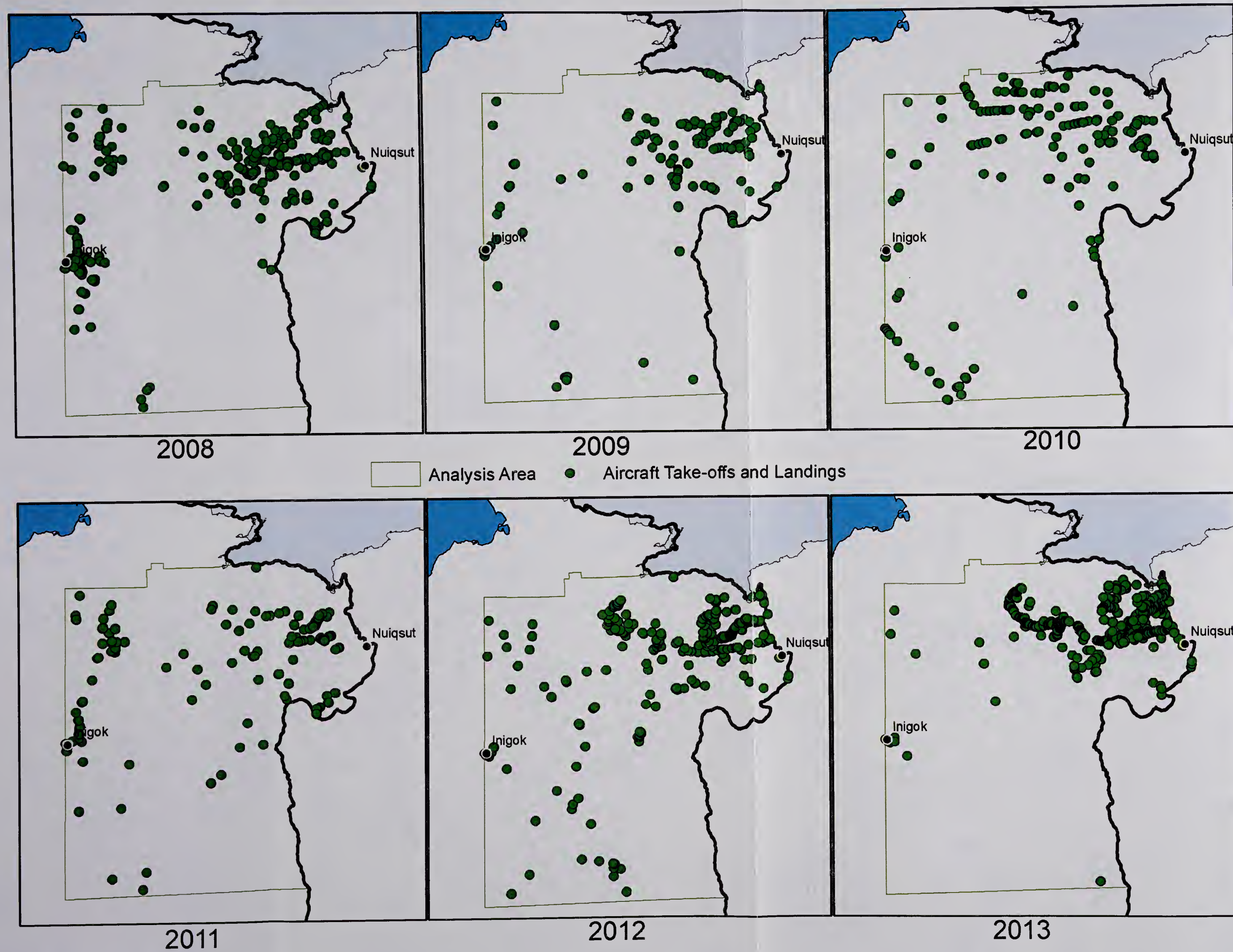


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Map 2.5-5

# Historic Flights in the Eastern NPR-A, 2008-2013

## Legend

-  Aircraft Take-offs and Landings
-  Village
-  Analysis Area
-  NPR-A

| Year         | Number of Flights |
|--------------|-------------------|
| 2008         | 1202              |
| 2009         | 1120              |
| 2010         | 1487              |
| 2011         | 1933              |
| 2012         | 777               |
| 2013         | 1758              |
| <b>Total</b> | <b>8277</b>       |

Source: BLM 2013b

Date: 10/21/2014

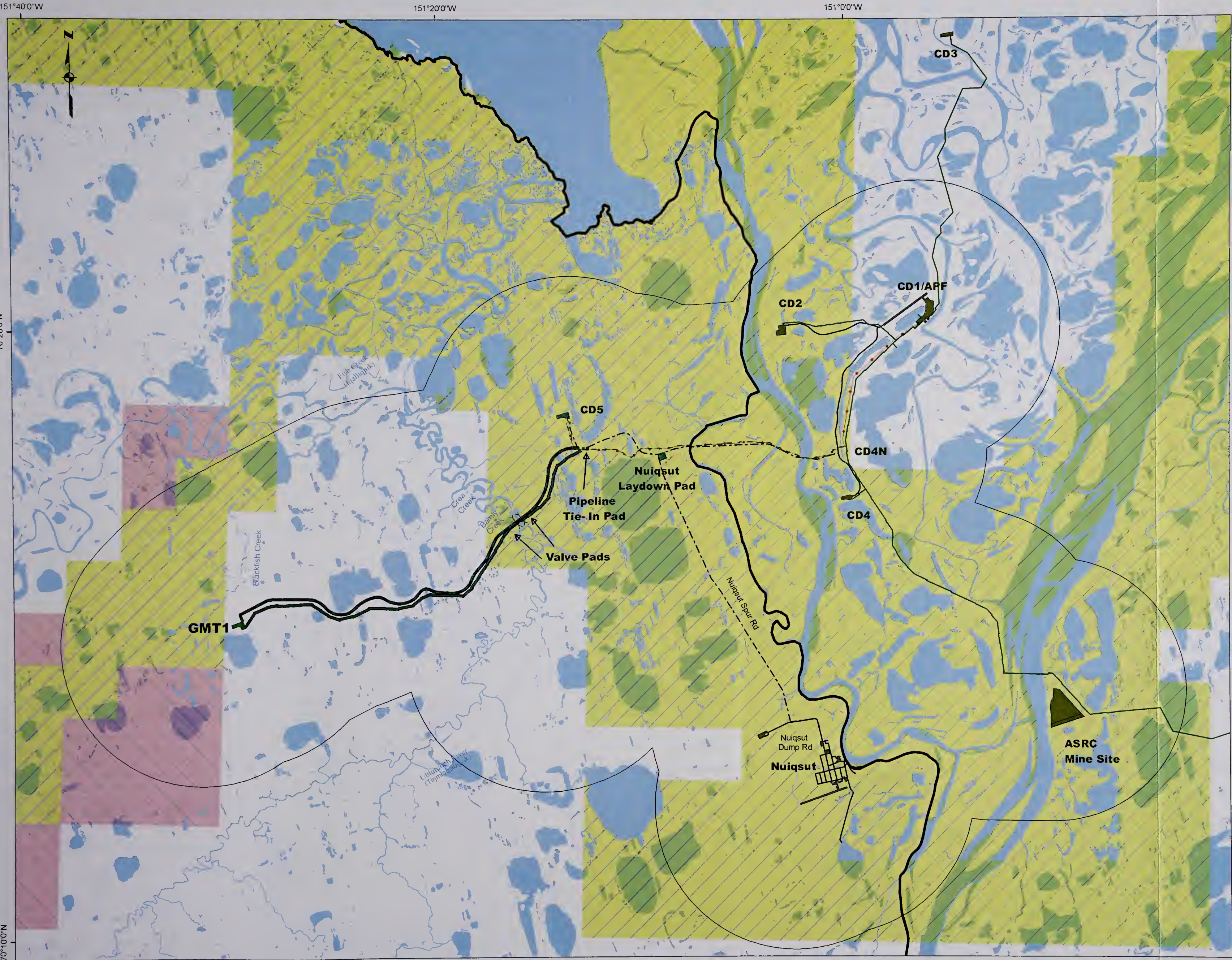
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**Map 2.6-1**

### Alternative B Layout

|                                     |   |   |          |
|-------------------------------------|---|---|----------|
| <b>Alternative B Infrastructure</b> |   | <b>Proposed or Permitted (not part of GMT1)</b> |          |
| Road                                | Pipeline                                  | Facility  | Road     |
| Facility                            | 14 inch Water <sup>1</sup> Injection Line | Bridge  | Facility |
| <b>Boundary</b>                     |   | <b>Surface Land Ownership</b>                   |          |
| Project Study Area                  | NPR-A                                     | Kuukpiik Lands                                  | Conveyed |
|                                     |   | Selected  |          |

**Footnote:**  
 1. 14 inch Water Injection line from CD1/APF to CD4N will be constructed on a new pipe rack. From CD4N to CD5 the 14-inch Water Injection line will be placed on the already proposed or permitted pipe rack (not part of GMT1).

**Date:** 9/28/2014

**Scale:** 0 0.5 1 2 3 Miles

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151°40'0"W

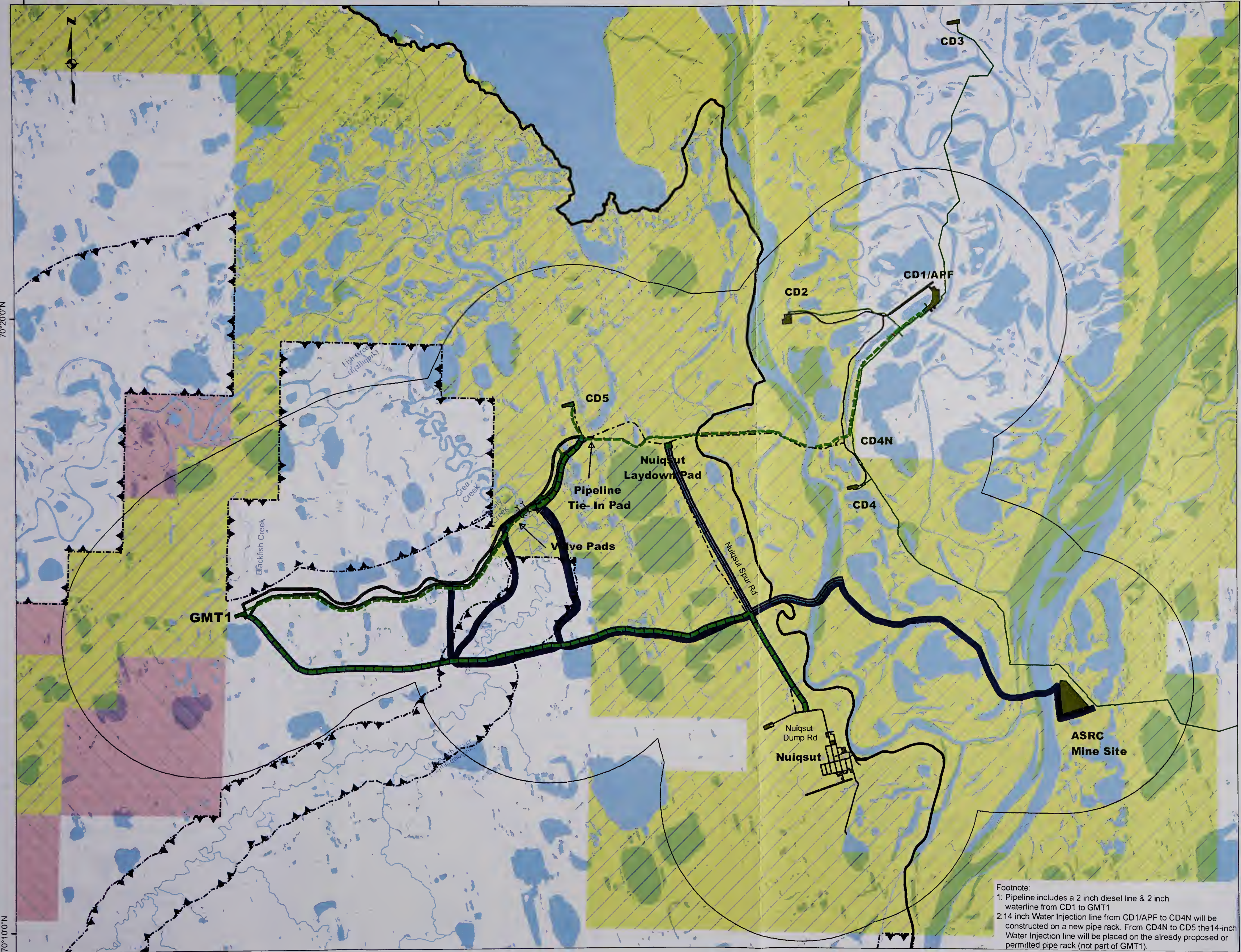
151°20'0"W

151°00'0"W

70°20'0"N

70°20'0"N

70°10'0"N



Map 2.6-2

## Alternative B Ice Roads

### Alternative B Infrastructure

— Road

— Pipeline

■ Facility

14 inch Water<sup>2</sup> Injection Line

— Bridge

### Boundary

Project Study Area

NPR-A

### Alternative B Ice Roads

— First Year

— Second Year

— Annual resupply Route

### Setback Area

Fish Creek 3 mi  
Ublutuoch River 0.5 mi

### Proposed or Permitted (not part of GMT1)

— Road

■ Facility

### Existing

— Pipeline

— Road

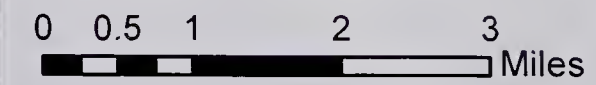
■ Facility

### Surface Land Ownership

Conveyed

Selected

Date: 9/27/2014



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Footnote:  
1. Pipeline includes a 2 inch diesel line & 2 inch waterline from CD1 to GMT1  
2. 14 inch Water Injection line from CD1/APF to CD4N will be constructed on a new pipe rack. From CD4N to CD5 the 14-inch Water Injection line will be placed on the already proposed or permitted pipe rack (not part of GMT1).



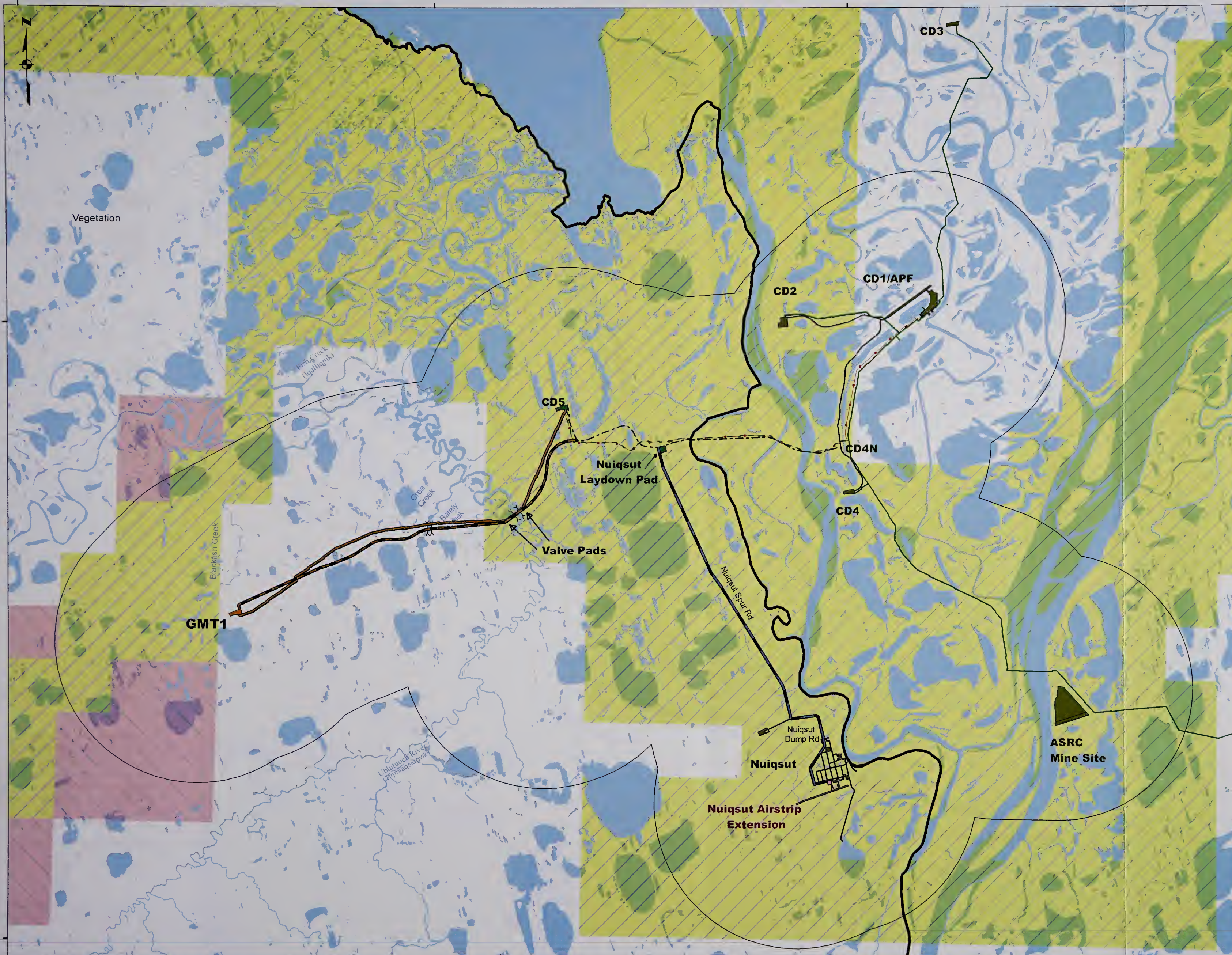
151°40'0"W

151°20'0"W

151°0'0"W

70°20'0"N

70°10'0"N



Map 2.7-1

## Alternative C Layout

Alternative C  
Infrastructure

Road

Pipeline

Facility

Nuiqsut Road

Nuiqsut Airport  
Upgrade Facilities14 inch Water<sup>1</sup>  
Injection Line

Bridge

Boundary

Project Study Area

NPR-A

Proposed or Permitted  
(not part of GMT1)

Road

Facility

Existing

Pipeline

Road

Facility

Surface Land  
Ownership  
Kuukpik Lands

Conveyed

Selected

## Footnote:

1. 14 inch Water Injection line from CD1/APF to CD4N will be constructed on a new pipe rack. From CD4N to CD5 the 14-inch Water Injection line will be placed on the already proposed or permitted pipe rack (not part of GMT1).

2. Nuiqsut Laydown Pad is a 10 acre gravel storage pad.

Date: 9/27/2014

0 0.5 1 2 3  
Miles

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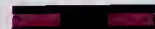



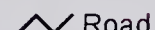
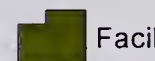
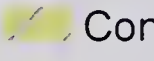
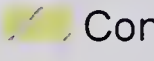


Map 2.7-2

## Alternative C Nuiqsut Airport Facilities

Alternative C Proposed  
Nuiqsut Infrastructure

-  Nuiqsut Dump and Spur Road Upgrade
-  Nuiqsut Airport Access Road (new)
-  Nuiqsut Airport Upgrade Facilities

- Existing
-  Road
-  Facility
- Surface Land Ownership
-  Kuukpik Lands
-  Conveyed

Date: 9/26/2014

0 0.050.1 0.2 0.3 0.4 0.5 Miles

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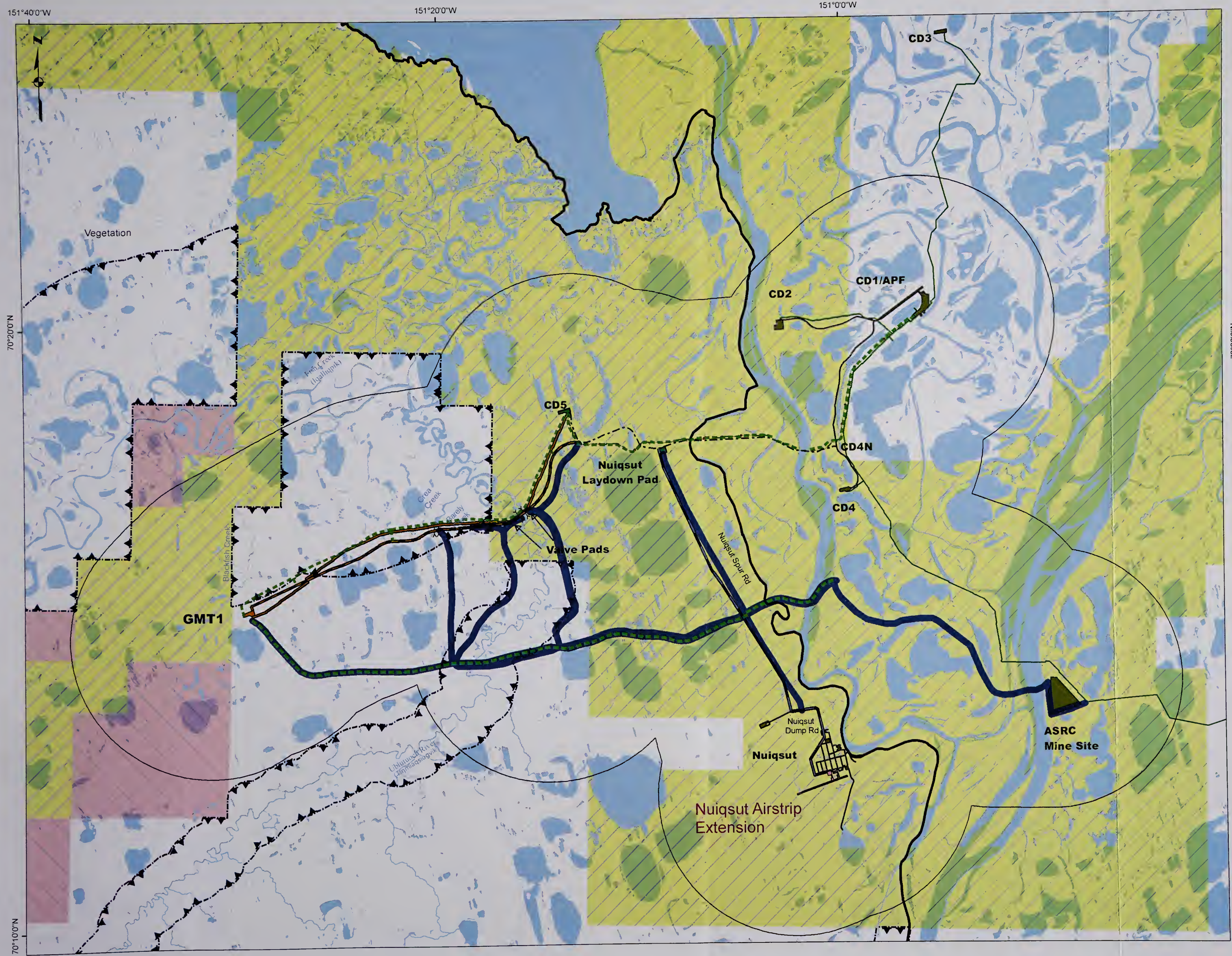
NAD 1983 StatePlane Alaska 4 FIPS 5004 Feet



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Map 2.7-3

Alternative C Ice Roads

Alternative C Infrastructure

Road

Pipeline

Facility

Nuiqsut Road

Nuiqsut Airport Upgrade Facilities

14 inch Water<sup>1</sup> Injection Line

Bridge

Proposed or Permitted (not part of GMT1)

Road

Facility

Existing

Pipeline

Road

Facility

Surface Land Ownership

Kuukpiik Lands

Conveyed

Selected

Boundary

Project Study

NPR-A

Year One Proposed Ice Road

Year Two Proposed Ice Road

Setback Area

Fish Creek 3 mi

Ublutuoch River 0.5 mi

Footnote:

1: 14 inch Water Injection line from CD1/APF to CD4N will be constructed on a new pipe rack. From CD4N to CD5 the 14-inch Water Injection line will be placed on the already proposed or permitted pipe rack (not part of GMT1).

2: Nuiqsut Laydown Pad is a 10 acre gravel storage pad.

Date: 10/20/2014

0 0.5 1 2 3

Miles

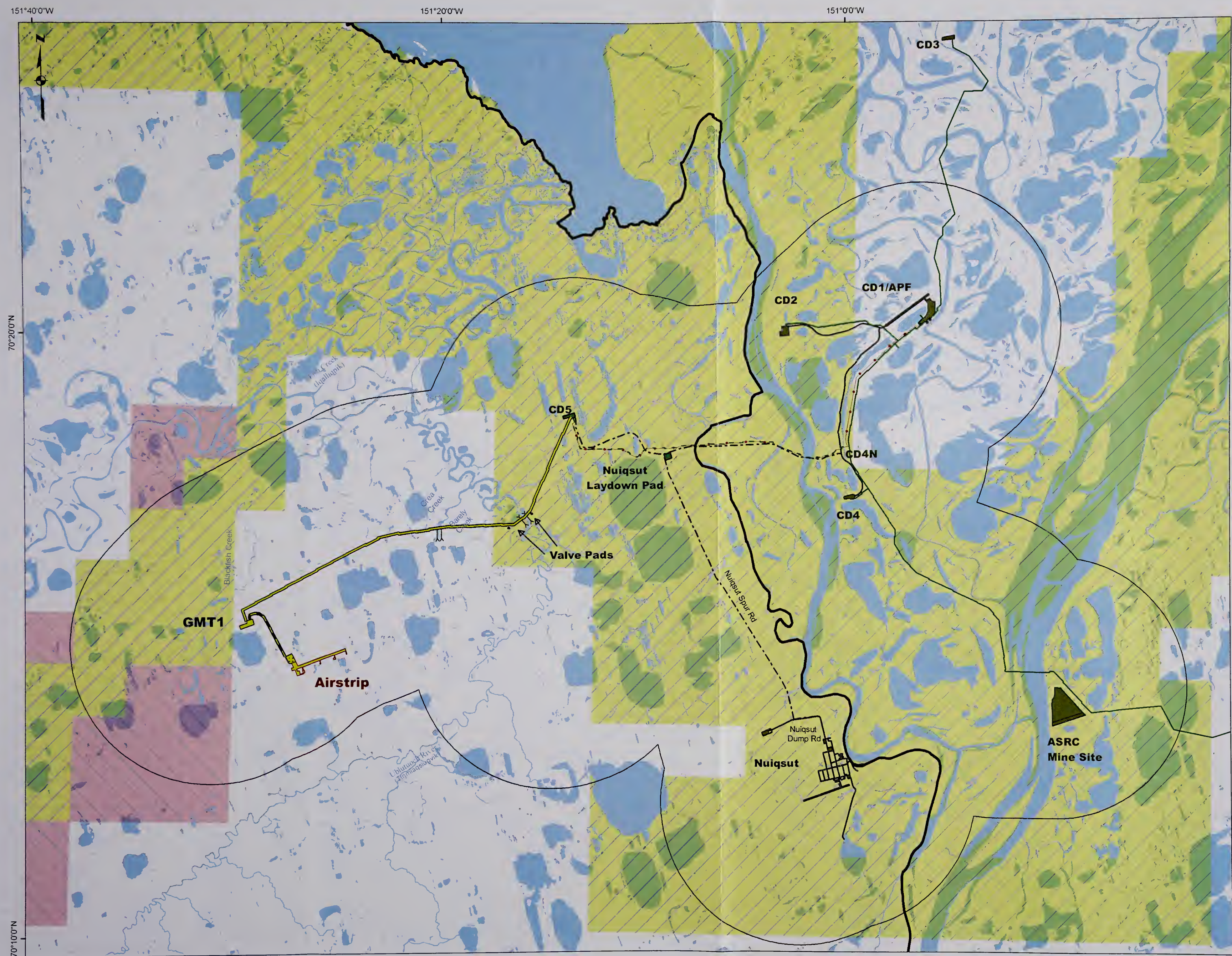
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# Map 2.8-1

## Alternative D1 and D2 Layout

- | Alternative D1/D2 Infrastructure            |   | Proposed or Permitted (not part of GMT1) |
|---|---|--|
| Road  | Pipeline                                | Road                                     |
| Facility                                    | Airstrip                                | Facility                                 |
| Airstrip Occupied Pad common to D1 and D2   | Airstrip additional Occupied Pad-for D1 | Existing Pipeline                        |
| 14 inch Water <sup>1,2</sup> Injection Line |   | Existing Road                            |
| Bridge                                      |   | Existing Facility                        |
| Boundary                                    |   | Surface Land Ownership Kuukpiik Lands    |
| Project Study Area                          |   | Conveyed                                 |
| NPR-A                                       |   | Selected                                 |

Footnote:  
1: Pipeline includes a 2 inch diesel line & 2 inch waterline from CD1 to GMT1  
2: 14 inch Water Injection line from CD1/APF to CD4N will be constructed on a new pipe rack. From CD4N to CD5 the 14-inch Water Injection line will be placed on the already proposed or permitted pipe rack (not part of GMT1).

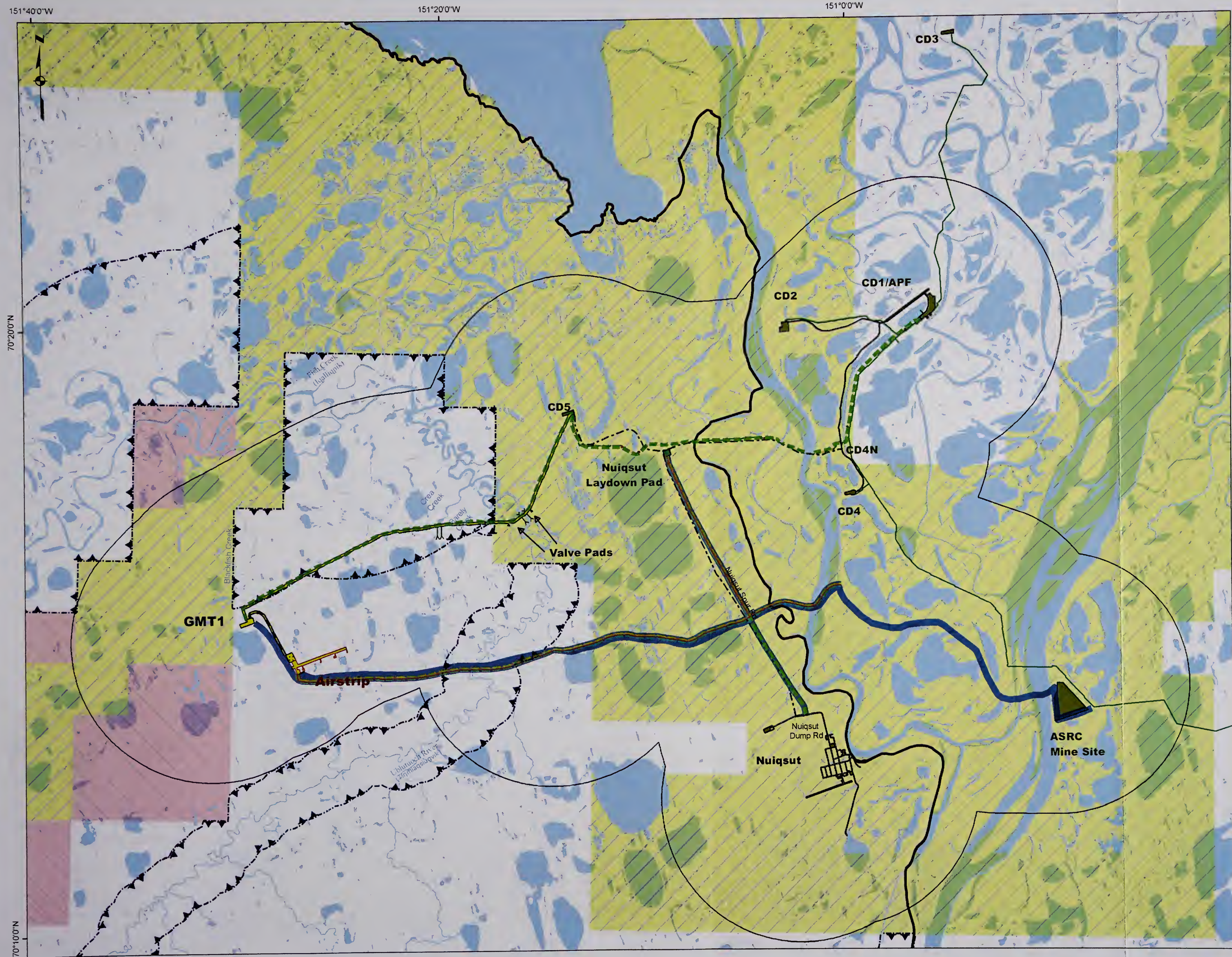
Date: 9/27/2014

0 0.5 1 2 3 Miles

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NAD 1983 StatePlane Alaska 4 FIPS 5004 Feet





Map 2.8-2

## Alternative D1 and D2 Ice Roads

Alternative D1/D2 Infrastructure

Road

Pipeline

Facility

Airstrip

Airstrip Occupied Pad common to D1 and D2

Airstrip additional Occupied Pad for D1

14 inch Water<sup>1,2</sup> Injection Line

Bridge

Ice Roads

First Year

Second Year

Annual Resupply Road

Boundary

Project Study Area

NPR-A

Setback Area

Fish Creek 3 mi  
Ublutuooh River 0.5 mi

Footnote:

1: Pipeline includes a 2 inch diesel line & 2 inch waterline from CD1 to GMT1

2: 14 inch Water Injection line from CD1/APF to CD4N will be constructed on a new pipe rack. From CD4N to CD5 the 14-inch Water Injection line will be placed on the already proposed or permitted pipe rack (not part of GMT1).

Date: 9/27/2014

0 0.5 1 2 3 Miles

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data, or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification. For official land status information refer to Cadastral Survey plats, Master Title Plats and land status case-files.

NAD 1983 StatePlane Alaska 4 FIPS 5004 Feet



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151°40'0"W

151°20'0"W

151°0'0"W

Map 2.10-1

# Alternative E: No Action

Proposed or Permitted  
(not part of GMT1)

Existing

Pipeline

Road

Facility

Pipeline

Road

Facility

Boundaries

Surface Land  
Ownership

Kuukpiik Lands

Conveyed

Selected

NPR-A

Project Study  
Area

Date: 10/21/2014

0 0.5 1 2 3  
Miles

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NAD 1983 StatePlane Alaska 4 FIPS 5004 Feet



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National Petroleum Reserve - Alaska

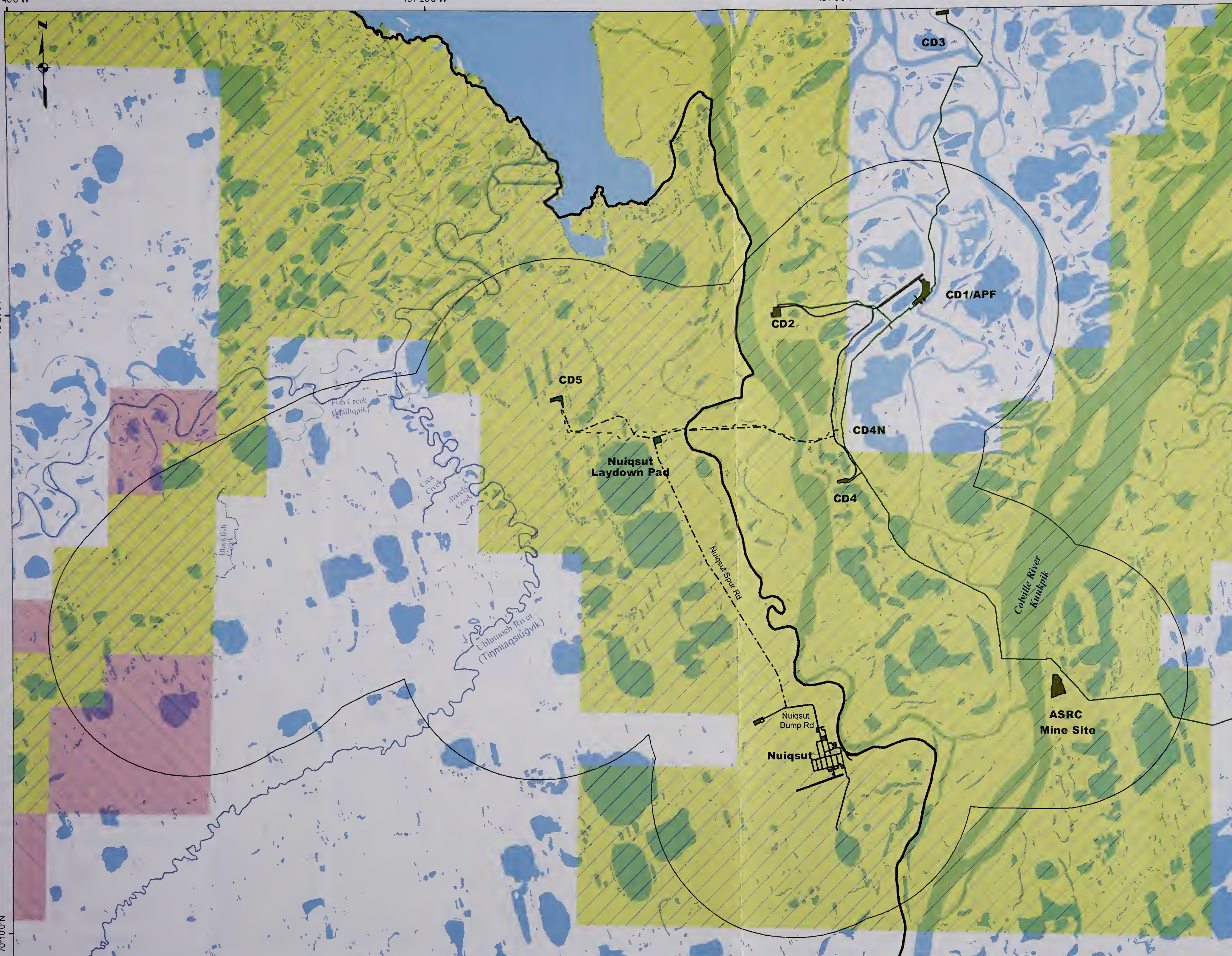
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Environmental Impact Statement 2014

70°20'0"N

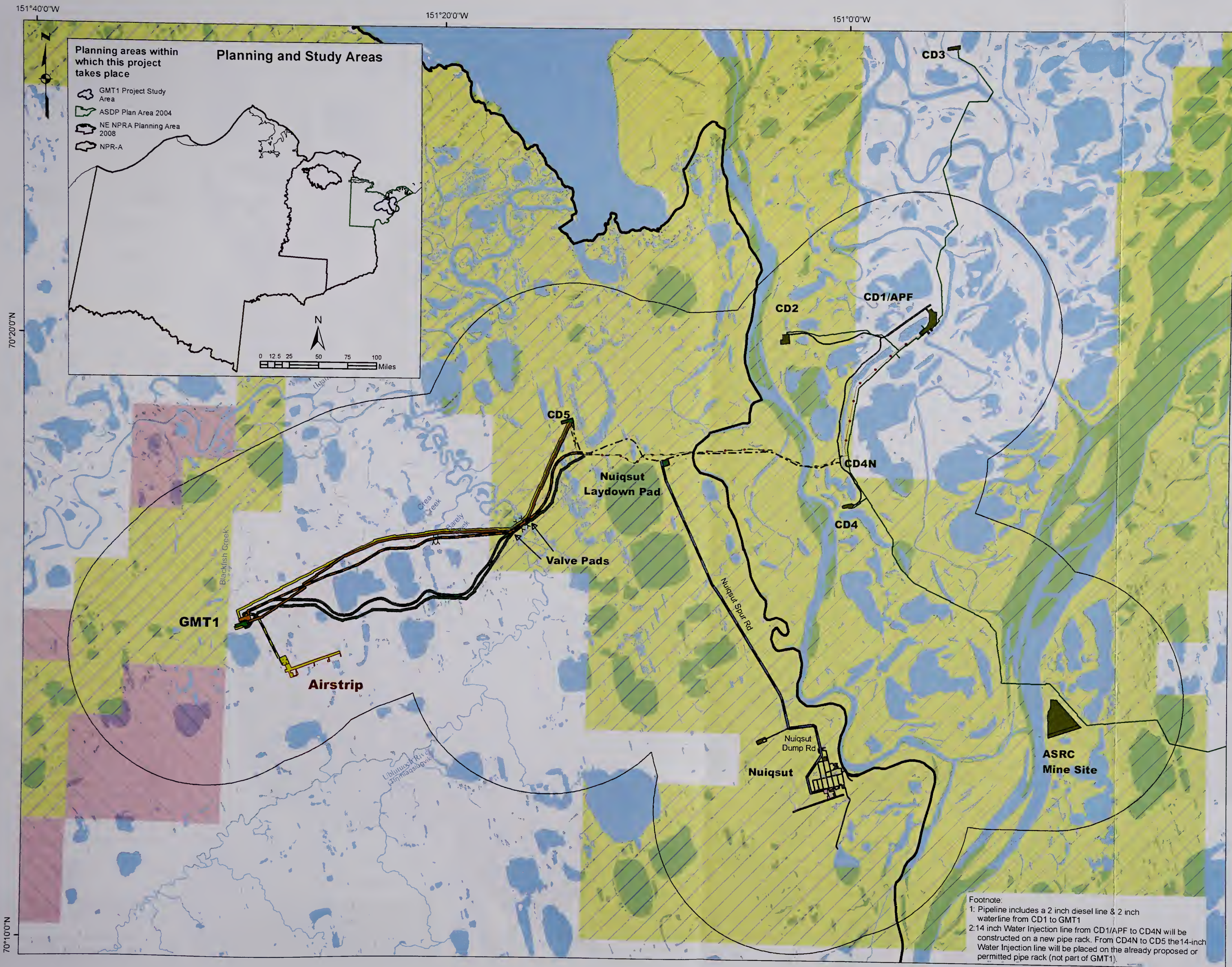
70°20'0"N

70°10'0"N

70°10'0"N







### Map 3.1-1

## Project Study Area

| Alternative A Infrastructure              | Alternative B Infrastructure                |
|---|---|
| Road                                      | Road  |
| Pipeline                                  | Pipeline                                    |
| Facility                                  | Facility                                    |
| 14 inch Water <sup>2</sup> Injection Line | 14 inch Water <sup>2</sup> Injection Line   |
| Bridge                                    | Bridge                                      |
| Alternative C Infrastructure              | Alternative D1/D2 Infrastructure            |
| Road                                      | Road  |
| Pipeline                                  | Pipeline                                    |
| Facility                                  | Facility                                    |
| Nuiqsut Road                              | AirStrip                                    |
| Nuiqsut Airport Upgrade Facilities        | AirStrip Occupied Pad common to D1 and D 2  |
| 14 inch Water <sup>2</sup> Injection Line | AirStrip additional Occupied Pad-for D1     |
| Bridge                                    | 14 inch Water <sup>1,2</sup> Injection Line |
| Boundary                                  | Bridge                                      |
| Project Study Area                        | Proposed or Permitted (not part of GMT 1)   |
| NPR-A                                     | Road  |
| Surface Land Ownership Kuukpik Lands      | Facility                                    |
| Conveyed                                  | Existing Pipeline                           |
| Selected                                  | Existing Road                               |
|   | Facility                                    |

Date: 9/29/2014

0 0.5 1 2 3 Miles

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NAD 1983 StatePlane Alaska 4 FIPS 5004 Feet

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Footnote:  
1: Pipeline includes a 2 inch diesel line & 2 inch waterline from CD1 to GMT1  
2: 14 inch Water Injection line from CD1/APF to CD4N will be constructed on a new pipe rack. From CD4N to CD5 the 14-inch Water Injection line will be placed on the already proposed or permitted pipe rack (not part of GMT1).



151°40'0"W

151°20'0"W

151°00'0"W

70°20'0"N

70°10'0"N

## Geomorphology

|                                  |                                    |                                  |                                       |                                       |
|----------------------------------|------------------------------------|----------------------------------|---------------------------------------|---------------------------------------|
| Eolian Active Sand Deposit       | Meander Inactive Overbank Deposit  | Delta Active Overbank Deposit    | Alluvial-Marine Deposit               | Thaw Basin, Ice-rich Margin           |
| Eolian Inactive Sand Deposit     | Meander Abandoned Overbank Deposit | Delta Inactive Overbank Deposit  | Solifluction Deposit                  | Thaw Basin, Ice-rich Undifferentiated |
| Inactive Tidal Flat              | Lowland Headwater Floodplain       | Delta Abandoned Overbank Deposit | Thaw Basin, Ice-poor Margin           | Thaw Basin Pingo                      |
| Meander Active Channel Deposit   | Delta Active Channel Deposit       | Delta Thaw Basin, Ice-poor       | Thaw Basin, Ice-poor Undifferentiated | Coastal Water                         |
| Meander Inactive Channel Deposit | Delta Inactive Channel Deposit     | Delta Thaw Basin, Ice-rich       | Thaw Basin, Ice-rich Center           | Fresh Water                           |
| Meander Active Overbank Deposit  |                                    | Old Alluvial Terrace             |                                       | Human Modified                        |

CD3

CD2

CD1/APF

CD4N

CD4

GMT1

Valve

Nuiqsut Dump Rd

Nuiqsut

ASRC Mine Site

Map 3.2-1

## Geomorphology

Alternative A Infrastructure

Road

Pipeline

Facility

14 inch Water<sup>2</sup> Injection Line

Bridge

Alternative C Infrastructure

Road

Pipeline

Facility

Nuiqsut Road

Nuiqsut Airport Upgrade Facilities

14 inch Water<sup>2</sup> Injection Line

Bridge

Boundary

Project Study Area

NPR-A

Alternative B Infrastructure

Road

Pipeline

Facility

14 inch Water<sup>2</sup> Injection Line

Bridge

Alternative D1/D2 Infrastructure

Road

Pipeline

Facility

AirStrip

AirStrip Occupied Pad common to D1 and D2

AirStrip additional Occupied Pad-for D1

14 inch Water<sup>1,2</sup> Injection Line

Bridge

Boundary

Proposed or Permitted (not part of GMT1)

Road

Facility

Existing

Pipeline

Road

Facility

Date: 9/27/2014

0 0.5 1 2 3 Miles

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NAD 1983 StatePlane Alaska 4 FIPS 5004 Feet



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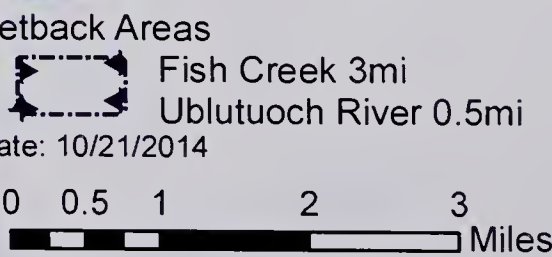
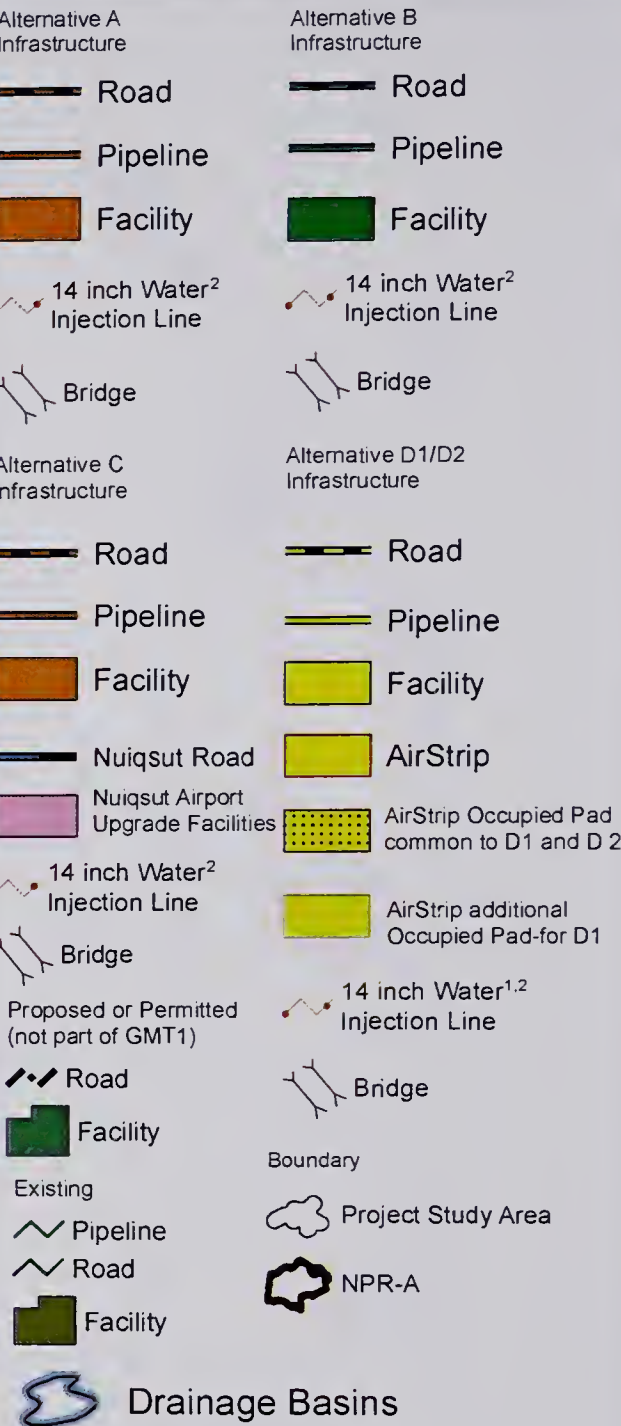
## Footnote

- 1: Pipeline includes a 2 inch diesel line & 2 inch waterline from CD1 to GMT1
- 2: 14 inch Water Injection line from CD1/APF to CD4N will be constructed on a new pipe rack. From CD4N to CD5 the 14-inch Water Injection line will be placed on the already proposed or permitted pipe rack (not part of GMT1).





Map 3.2-2  
Drainage Basins



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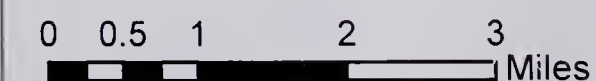
NAD 1983 StatePlane Alaska 4 FIPS 5004 Feet

Footnote:  
1: Pipeline includes a 2 inch diesel line & 2 inch waterline from CD1 to GMT1  
2: 14 inch Water Injection line from CD1/APF to CD4N will be constructed on a new pipe rack. From CD4N to CD5 the 14-inch Water Injection line will be placed on the already proposed or permitted pipe rack (not part of GMT1).





Date: 10/21/2014



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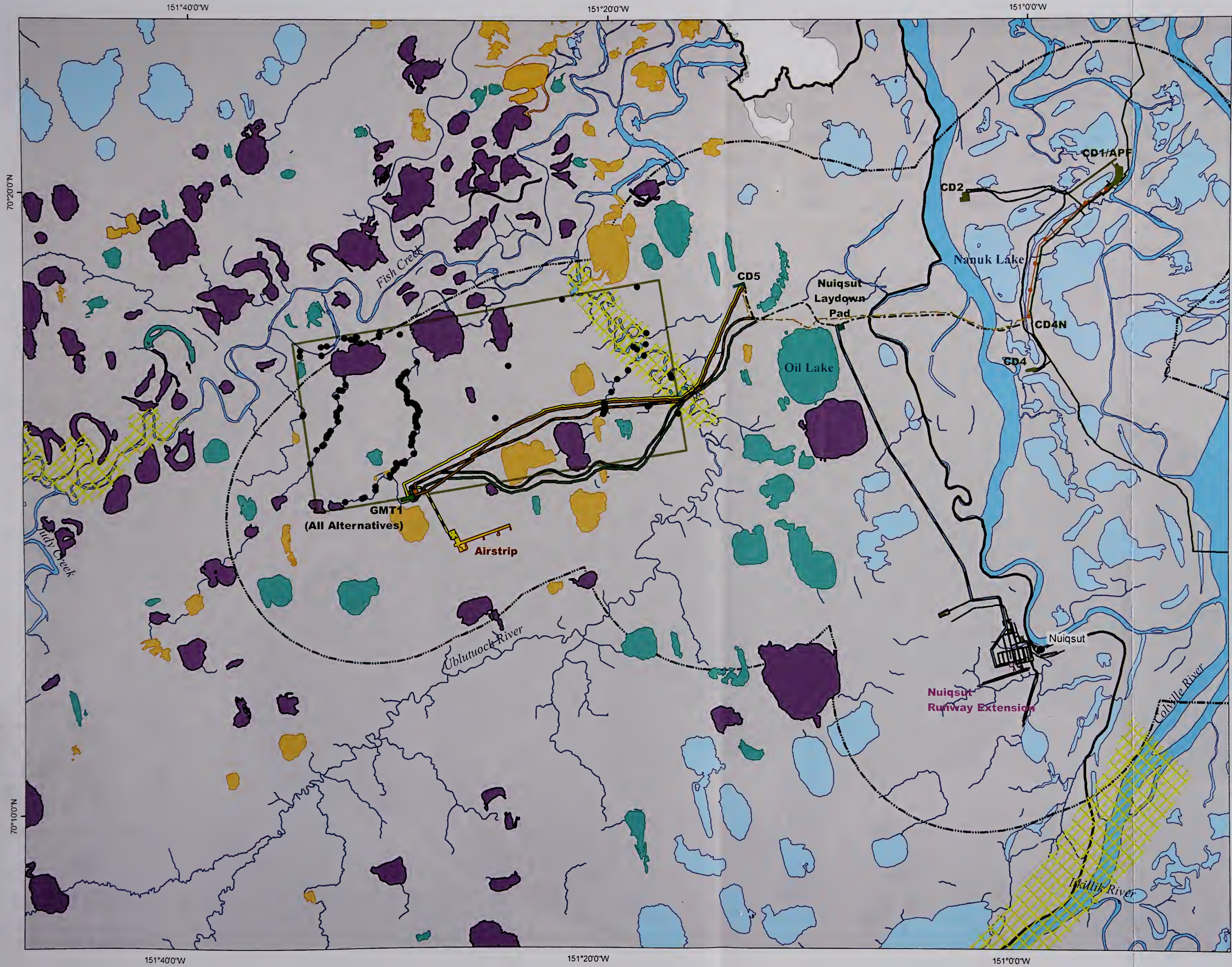
NAD 1983 StatePlane Alaska 4 FIPS 5004 Feet



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Map 3.3-1

## Potential and Known Fish Overwintering Habitat

- Fish Wintering Areas
- Bedfast Ice Regime
- Transitional Ice Regime
- Floating Ice Regime
  - stream pool features with floating ice
- Waterbodies not analyzed

### Jones Project Extent

- | Alternative A Infrastructure | Alternative B Infrastructure |
|------------------------------|------------------------------|
| Pipeline                     | Pipeline                     |
| Road                         | Road                         |
| Facility                     | Facility                     |
- | Alternative C Infrastructure    | Alternative D1/D2 Infrastructure |
|---------------------------------|----------------------------------|
| Pipeline                        | Pipeline                         |
| Road                            | Road                             |
| Nuiqsut Spur/Dump/Airport Roads | Facility                         |
| Facility                        | Airstrip                         |

- | Proposed or Permitted (not part of GMT1) | Existing |
|--|----------|
| Pipeline                                 | Pipeline |
| Road                                     | Road     |
| Facility                                 | Facility |

- GMT1 SEIS Project Areas
- Project Study Area
  - NPR-A

Data sources:  
Morris 2003,  
Arp et al. 2012,  
Jones et al. 2013

0 0.5 1 2 3 Miles

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NAD 1983 StatePlane Alaska 4 FIPS 5004 Feet



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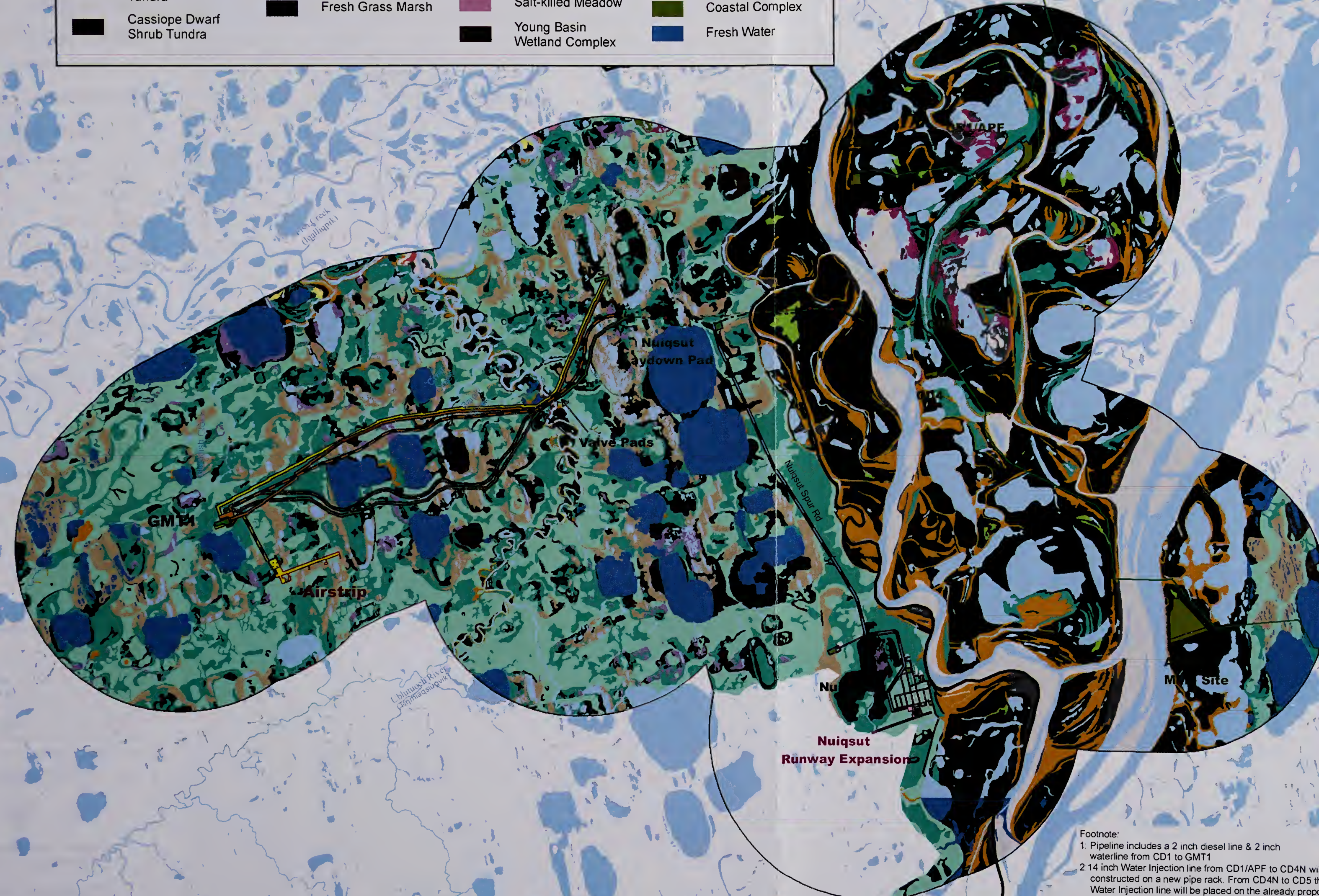
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151°40'0"W  
70°20'0"N  
151°20'0"W  
70°20'0"N  
151°0'0"W  
70°10'0"N

## Vegetation

|                             |                          |  |                           |
|-----------------------------|--------------------------|--|---------------------------|
| Barren                      | Tussock Tundra           | Halophytic Willow-Graminoid Dwarf Shrub Tundra | Old Basin Wetland Complex |
| Partially Vegetated         | Moist Sedge-Shrub Tundra |  | Deep Polygon Complex      |
| Open Tall Willow            | Wet Sedge Meadow Tundra  | Halophytic Sedge-Grass Wet Meadow, Brackish    | Riverine Complex          |
| Open Low Willow             | Fresh Sedge Marsh        | Salt-killed Meadow                             | Dune Complex              |
| Dryas Dwarf Shrub Tundra    | Fresh Grass Marsh        | Young Basin Wetland Complex                    | Coastal Complex           |
| Cassiope Dwarf Shrub Tundra |                          |  | Fresh Water               |



Map 3.3-2

## Vegetation

| Alternative A Infrastructure              | Alternative B Infrastructure                |
|---|---|
| Road                                      | Road  |
| Pipeline                                  | Pipeline                                    |
| Facility                                  | Facility                                    |
| 14 inch Water <sup>2</sup> Injection Line | 14 inch Water <sup>2</sup> Injection Line   |
| Bridge                                    | Bridge                                      |
| Alternative C Infrastructure              | Alternative D1/D2 Infrastructure            |
| Road                                      | Road  |
| Pipeline                                  | Pipeline                                    |
| Facility                                  | Facility                                    |
| Nuiqsut Road                              | AirStrip                                    |
| Nuiqsut Airport Upgrade Facilities        | AirStrip Occupied Pad common to D1 and D2   |
| 14 inch Water <sup>2</sup> Injection Line | AirStrip additional Occupied Pad-for D1     |
| Bridge                                    | 14 inch Water <sup>1,2</sup> Injection Line |
|   | Bridge                                      |
| Boundary                                  | Proposed or Permitted (not part of GMT1)    |
| Project Study Area                        | Road  |
| NPR-A                                     | Facility                                    |
|   | Existing                                    |
|   | Pipeline                                    |
|   | Road  |
|   | Facility                                    |

Date: 9/27/2014

0 0.5 1 2 3 Miles

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NAD 1983 StatePlane Alaska 4 FIPS 5004 Feet



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Footnote:  
1. Pipeline includes a 2 inch diesel line & 2 inch waterline from CD1 to GMT1  
2. 14 inch Water Injection line from CD1/APF to CD4N will be constructed on a new pipe rack. From CD4N to CD5 the 14-inch Water Injection line will be placed on the already proposed or permitted pipe rack (not part of GMT1).





Map 3.3-3

Anadromous Waters and Essential Fish Habitat

**Anadromous Waters**

Streams  
(black arrows indicate stream flow direction)

Lakes

**Essential Fish Habitat**

KSp- King salmon present upstream extent

CSp- Chum salmon & PSp- Pink salmon present upstream extent

**Waterbodies**

Lake/Pond

**Alternative A Infrastructure**

Pipeline

Road

Facility

**Alternative B Infrastructure**

Pipeline

Road

Facility

**Alternative C Infrastructure**

Pipeline

Road

Nuiqsut Spur/Dump/Airport Roads

Facility

**Alternative D1/D2 Infrastructure**

Pipeline

Road

Facility

Airstrip

**Proposed or Permitted (not part of GMT1)**

Pipeline

Road

Facility

**Existing**

Pipeline

Road

Facility

**GMT1 SEIS Project Areas**

Project Study Area

NPR-A

**Data Sources:**

Anadromous Waters Catalog (ADFG), 2013a

0 1 2 Miles

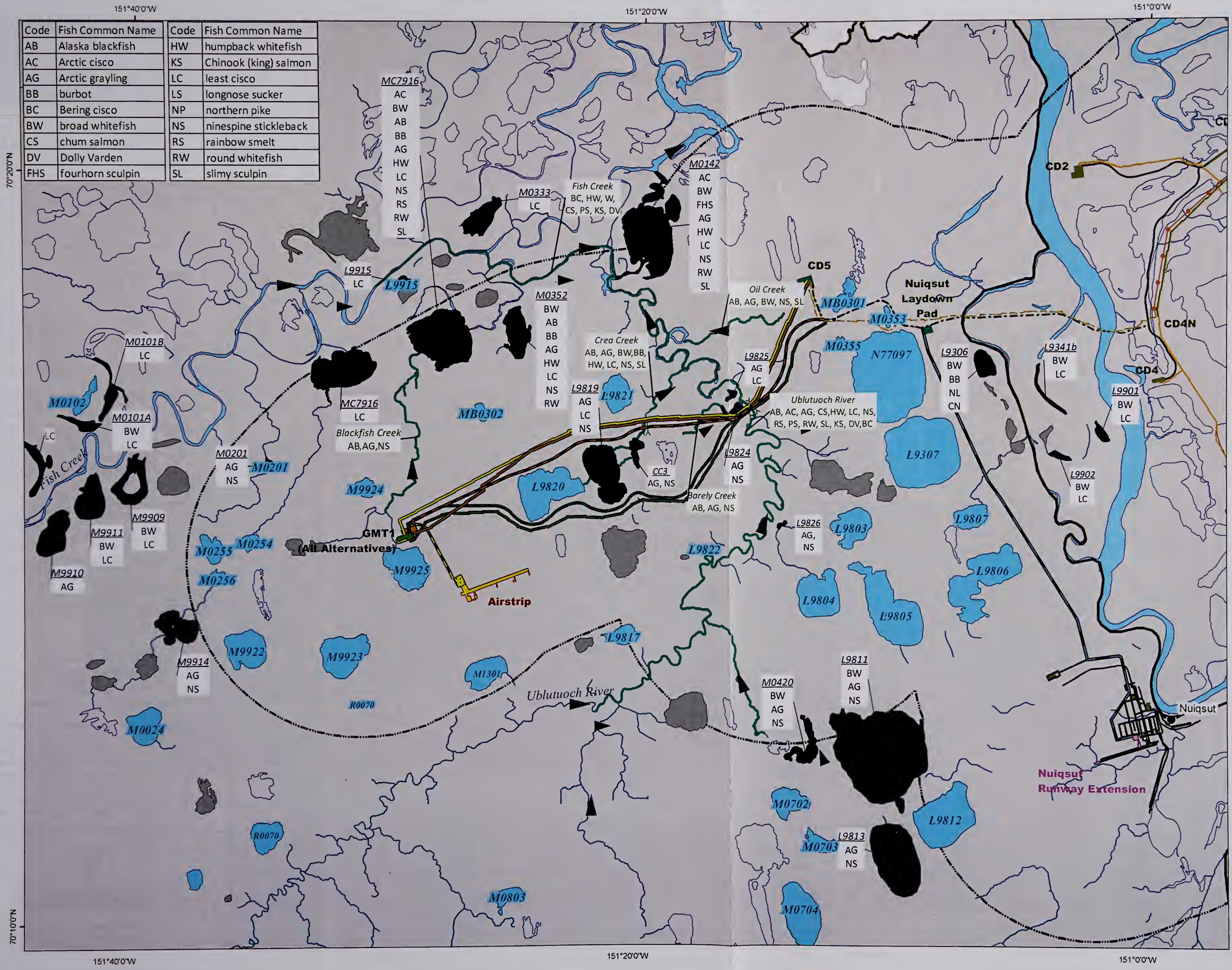
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NAD 1983 StatePlane Alaska 4 FIPS 5004 Feet

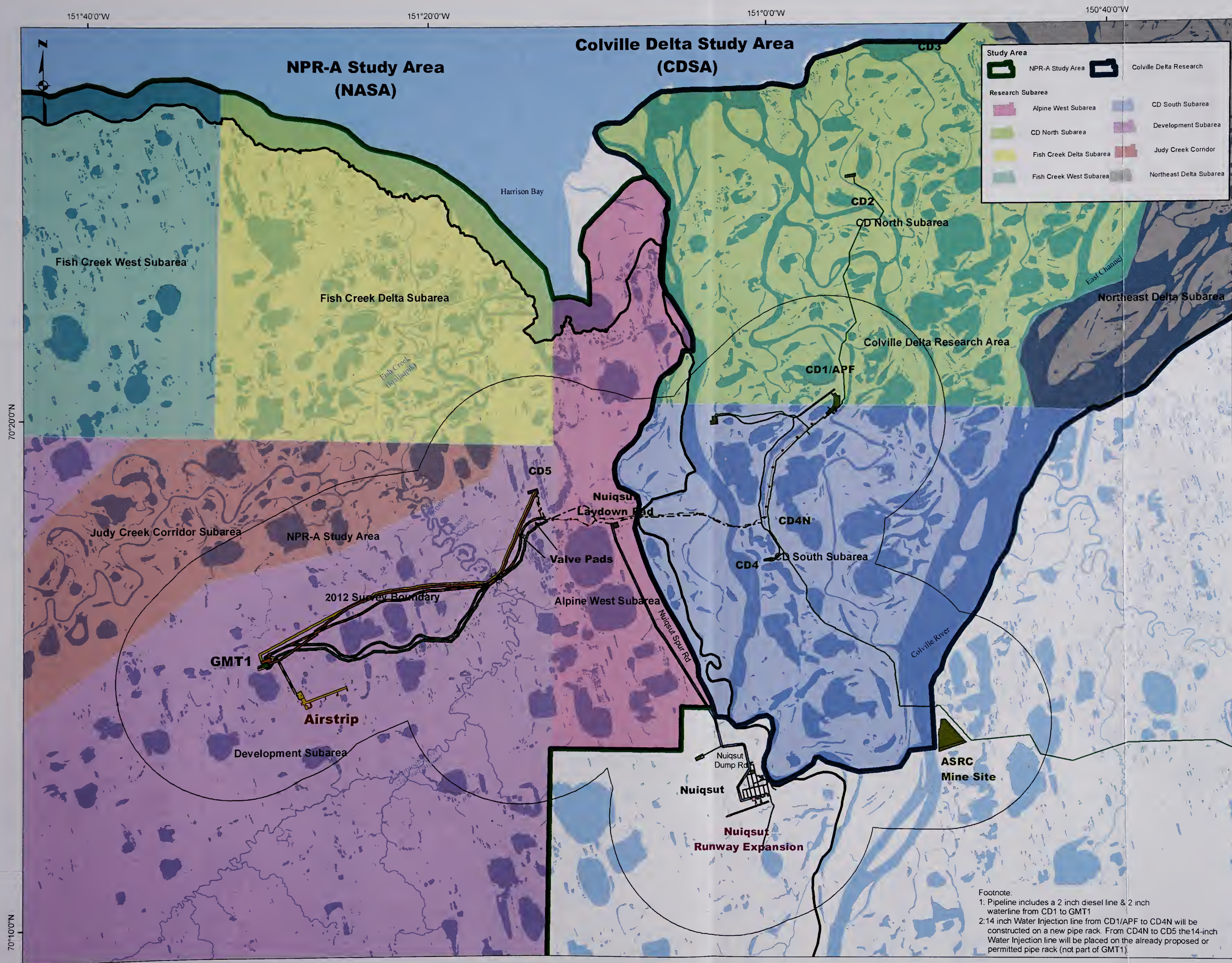
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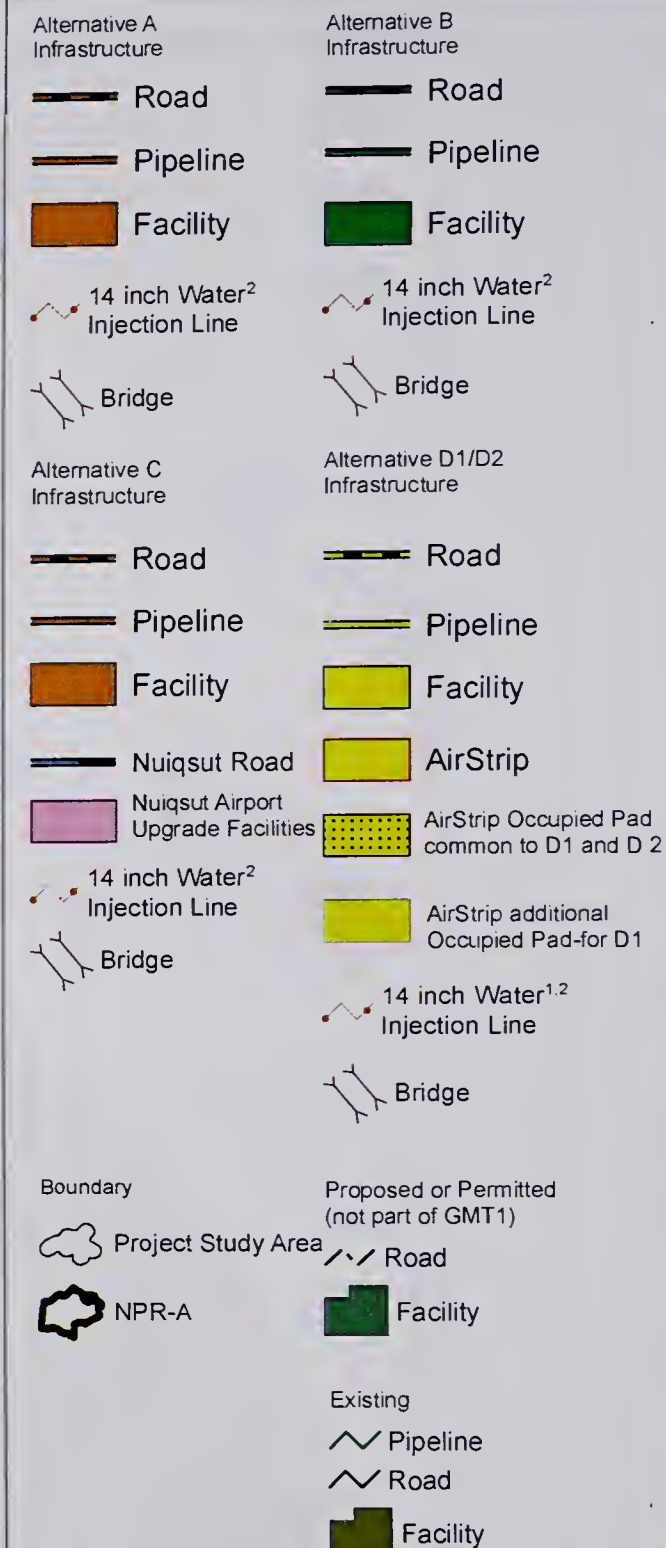




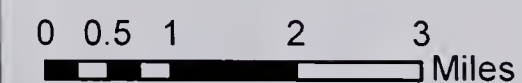


Map 3.3-5

## Avian Study Areas



Date: 9/27/2014



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NAD 1983 StatePlane Alaska 4 FIPS 5004 Feet



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**Footnote:**

- 1: Pipeline includes a 2 inch diesel line & 2 inch waterline from CD1 to GMT1
- 2: 14 inch Water Injection line from CD1/APF to CD4N will be constructed on a new pipe rack. From CD4N to CD5 the 14-inch Water Injection line will be placed on the already proposed or permitted pipe rack (not part of GMT1).



151°40'0"W

151°20'0"W

151°0'0"W

## Habitat Types

|  |                          |  |                             |  |  |  |  |
|--|--------------------------|--|-----------------------------|--|--|--|--|
|  | Barrens                  |  | Nonpatterned Wet Meadow     |  | Shallow Open Water with Islands or Polygonized Margins |  | Tapped Lake with High-water Connection |
|  | Dry Dwarf Shrub          |  | Sedge Marsh                 |  | Shallow Open Water without Islands                     |  | River or Stream                        |
|  | Moist Dwarf Shrub        |  | Grass Marsh                 |  | Deep Open Water with Islands or Polygonized Margins    |  | Moist Halophytic Dwarf Shrub           |
|  | Moist Low Shrub          |  | Deep Polygon Complex        |  | Deep Open Water without Islands                        |  | Salt Marsh                             |
|  | Dry Tall Shrub           |  | Young Basin Wetland Complex |  | Deep Open Water without Islands                        |  | Salt-killed Tundra                     |
|  | Moist Tall Shrub         |  | Old Basin Wetland Complex   |  | Deep Open Water without Islands                        |  | Tapped Lake with Low-water Connection  |
|  | Moist Sedge-Shrub Meadow |  | Riverine Complex            |  | Brackish Water   |  | Human Modified                         |
|  | Moist Tussock Tundra     |  | Dune Complex                |  |  |  |  |
|  | Patterned Wet Meadow     |  |                             |  |  |  |  |

70°20'0"N

70°10'0"N

Map 3.3-6

## Wildlife Habitat

| Alternative A Infrastructure              | Alternative B Infrastructure                    |
|---|---|
| Road                                      | Road  |
| Pipeline                                  | Pipeline  |
| Facility                                  | Facility  |
| 14 inch Water <sup>2</sup> Injection Line | 14 inch Water <sup>2</sup> Injection Line       |
| Bridge                                    | Bridge  |
| Alternative C Infrastructure              | Alternative D1/D2 Infrastructure                |
| Road                                      | Road  |
| Pipeline                                  | Pipeline  |
| Facility                                  | Facility  |
| Nuiqsut Road                              | AirStrip  |
| Nuiqsut Airport Upgrade Facilities        | AirStrip Occupied Pad common to D1 and D2       |
| 14 inch Water <sup>2</sup> Injection Line | AirStrip additional Occupied Pad-for D1         |
| Bridge                                    | 14 inch Water <sup>1,2</sup> Injection Line     |
|   | Bridge  |
| <b>Boundary</b>                           | <b>Proposed or Permitted (not part of GMT1)</b> |
| Project Study Area                        | Road  |
| NPR-A                                     | Facility  |
|   | <b>Existing</b>                                 |
|   | Pipeline  |
|   | Road  |
|   | Facility  |

Date: 9/29/2014

0 0.5 1 2 3 Miles

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NAD 1983 StatePlane Alaska 4 FIPS 5004 Feet



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## Footnote:

- 1: Pipeline includes a 2 inch diesel line & 2 inch waterline from CD1 to GMT1
- 2: 14 inch Water Injection line from CD1/APF to CD4N will be constructed on a new pipe rack. From CD4N to CD5 the 14-inch Water Injection line will be placed on the already proposed or permitted pipe rack (not part of GMT1).



151°40'0"W

151°20'0"W

151°0'0"W

70°20'0"N

70°10'0"N

## 2012 Avian Survey Results

- ★ King Eider Occurrence
- ★ Spectacled Eider Occurrence

### Glaucous Gull

#### Label

- Nest Colony, Brood
- Single Nest

### Pacific Loon Nest Brood Locations

#### Label

- Brood
- Nest

### Tundra Swan Locations

#### Tundra Swan Locations

- Brood
- Nest

### Yellow Billed Loon Locations

#### Label

- Brood
- Nest

Source : Johnstone et al. 2013

## Map 3.3-7

## 2012 Avian Survey

### Alternative A Infrastructure

— Road

— Pipeline

■ Facility

— 14 inch Water<sup>2</sup> Injection Line

— Bridge

### Alternative C Infrastructure

— Road

— Pipeline

■ Facility

— Nuiqsut Road

— Nuiqsut Airport Upgrade Facilities

— 14 inch Water<sup>2</sup> Injection Line

— Bridge

### Boundary

— Project Study Area

— NPR-A

### Alternative B Infrastructure

— Road

— Pipeline

■ Facility

— 14 inch Water<sup>2</sup> Injection Line

— Bridge

### Alternative D1/D2 Infrastructure

— Road

— Pipeline

■ Facility

— AirStrip

— AirStrip Occupied Pad common to D1 and D2

— AirStrip additional Occupied Pad-for D1

— 14 inch Water<sup>1,2</sup> Injection Line

— Bridge

Proposed or Permitted (not part of GMT1)

— Road

— Facility

Existing

— Pipeline

— Road

— Facility

Date: 9/27/2014

0 0.5 1 2 3 Miles

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NAD 1983 StatePlane Alaska 4 FIPS 5004 Feet



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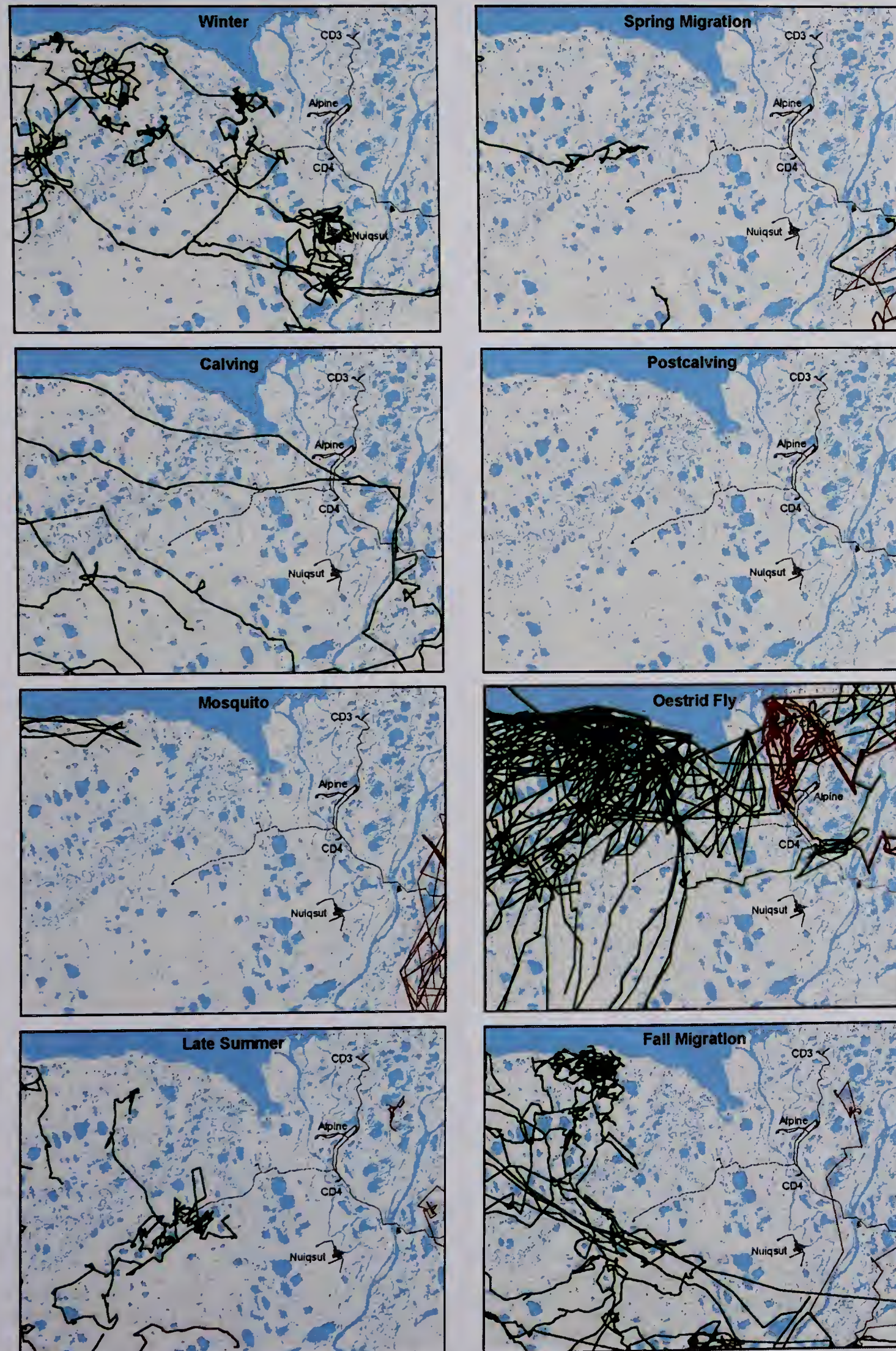
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### Footnote:

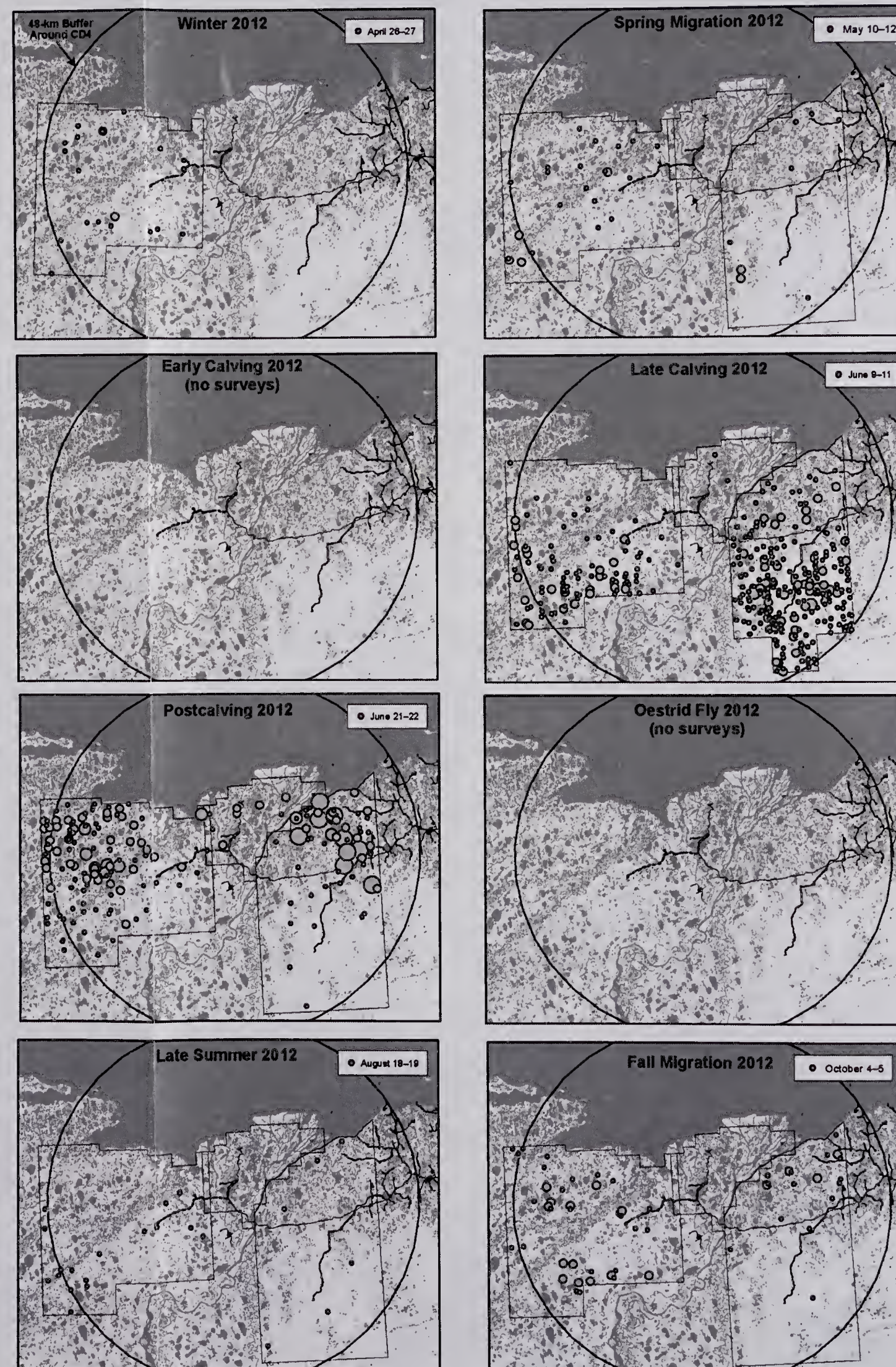
- 1: Pipeline includes a 2 inch diesel line & 2 inch waterline from CD1 to GMT1
- 2: 14 inch Water Injection line from CD1/APF to CD4N will be constructed on a new pipe rack. From CD4N to CD5 the 14-inch Water Injection line will be placed on the already proposed or permitted pipe rack (not part of GMT1).



Movements of GPS-collared caribou from the Teshekpuk Herd (2004-2012) and Central Arctic Herd (2003-2006 and 2008-2012) in the vicinity of the proposed ASDP road during 8 different seasons.



Distribution and size of caribou groups during different seasons in the NPR-A, Colville River Delta, and Colville East survey areas, April-October 2012.



Map 3.3-8

## Ranges of the Teshekpuk and Central Arctic Caribou Herds, GPS and Aerial

Legend

- Central Arctic Herd
- Teshekpuk Herd
- Existing Infrastructure
- Proposed ASDP Road
- Aerial Survey Area

### Caribou Group Size

- 1 - 5
- 6 - 25
- 26 - 100
- 101 - 525

- Existing Infrastructure
- Proposed ASDP Road

Source: Lawhead et al. 2012

Date: 10/21/2014

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NAD 1983 StatePlane Alaska 4 FIPS 5004 Feet

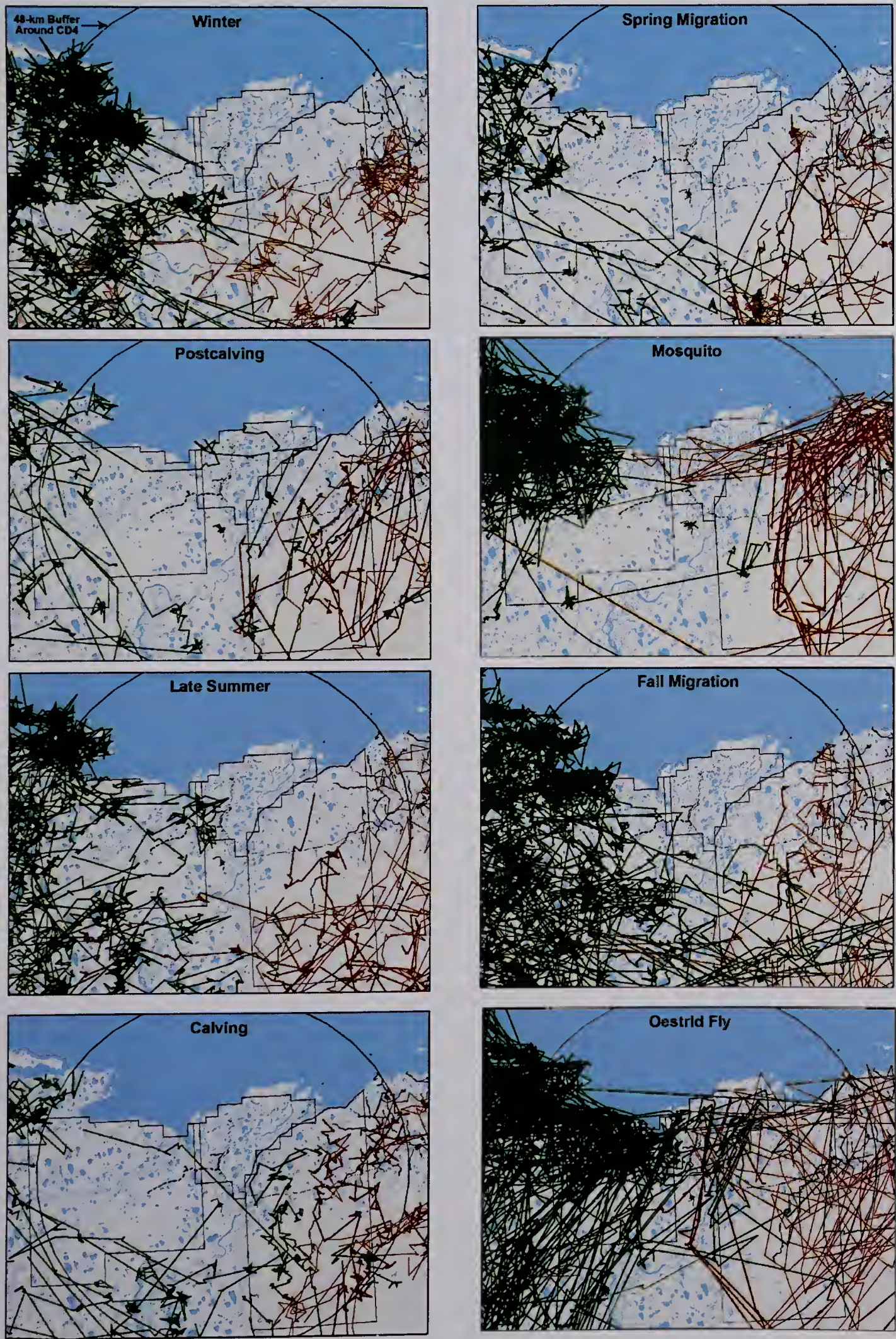


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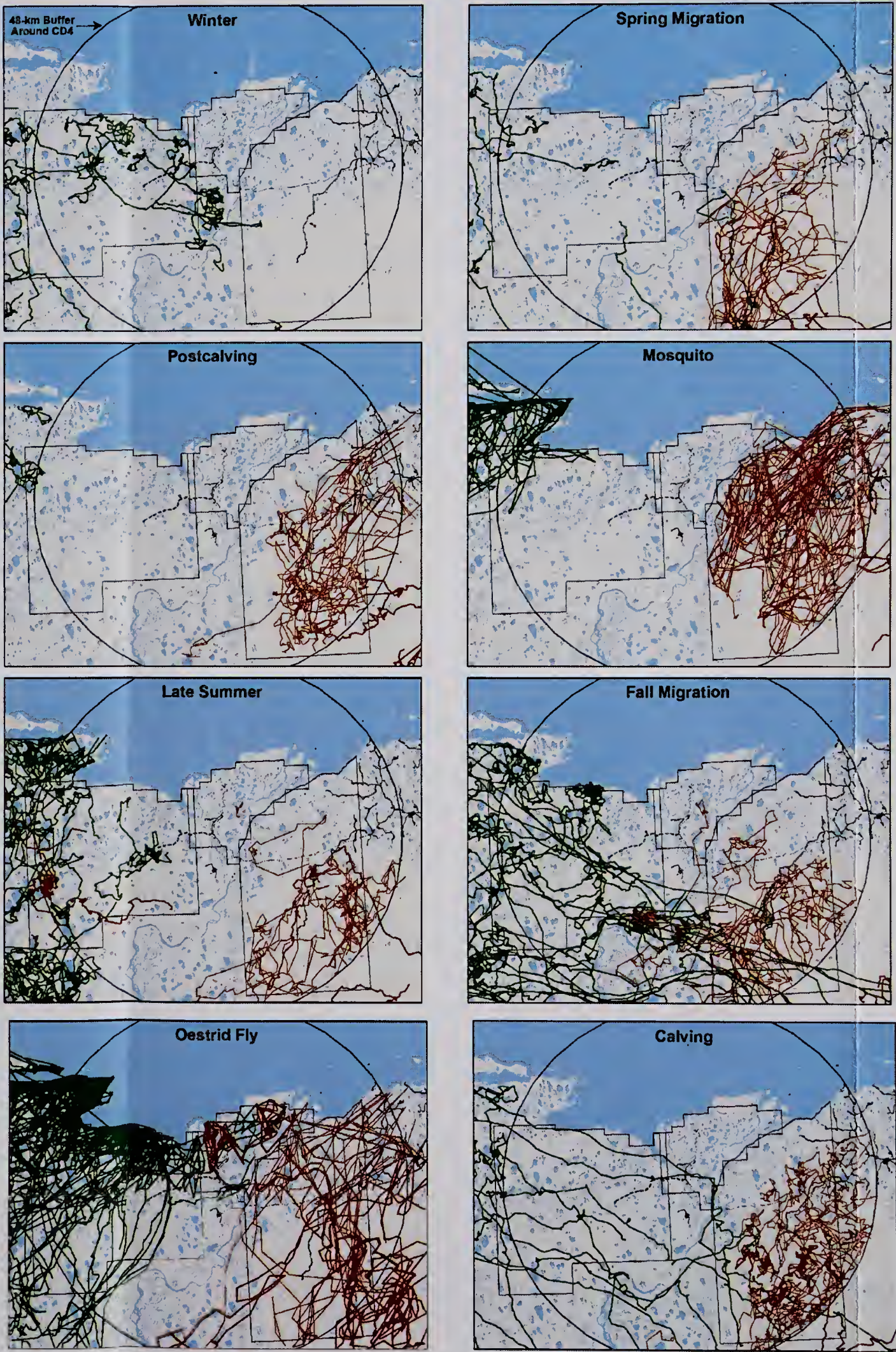
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Movements of satellite-collared caribou from the Teshekpuk Herd (1990-2012 and Central Arctic Herd (1986-1990 and 2001-2009) in the ASDP study area during 8 different seasons.



Movements of GPS-collared caribou from the Teshekpuk Herd (2004-2012) and Central Arctic Herd (2003-2006, 2008-2012) in the ASDP study area during 8 different seasons.



Map 3.3-9  
Ranges of the Teshekpuk and  
Central Arctic Caribou Herds,  
Satellite and GPS

- Legend
- Central Arctic Herd
  - Teshekpuk Herd
  - Existing Infrastructure
  - Proposed ASDP Road
  - Aerial Survey Area

Source: Lawhead et al. 2012

Date: 10/21/2014

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NAD 1983 StatePlane Alaska 4 FIPS 5004 Feet



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**Map 3.3-10**

**Nuiqsut Travel Routes**

Legend

Nuiqsut Travel Route  
(Source: SRBA 2010a)

Project Study Area

Subsistence Study Community

Other Community

Other Place

Draft Date: 12/6/2013

0 5 10 20 30 Miles

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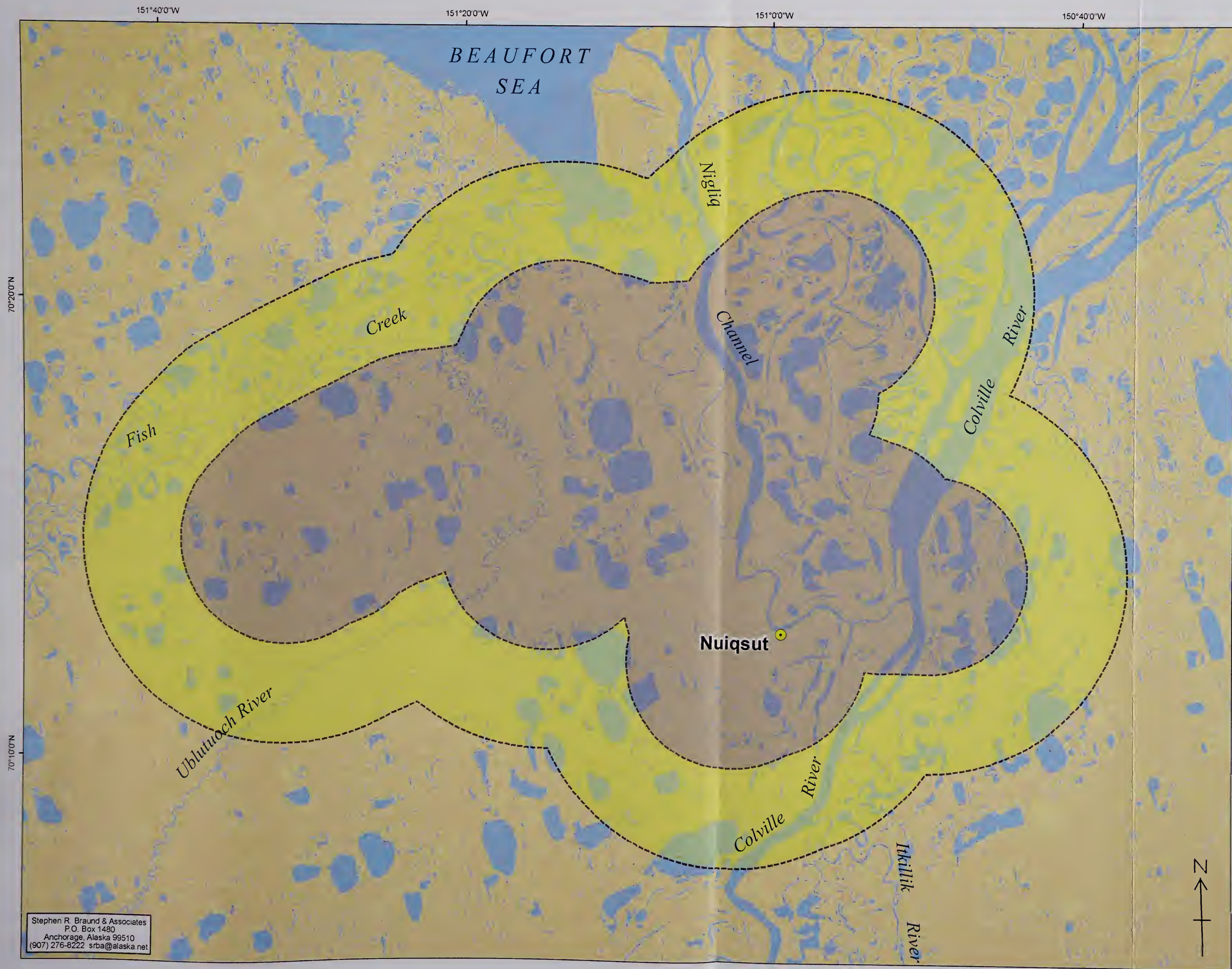
NAD 1983 StatePlane Alaska 4 FIPS 5004 Feet

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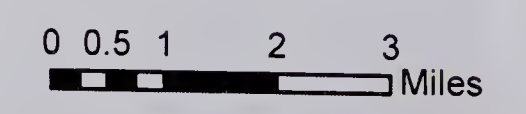




**Map 3.3-11**

**Visual and Noise  
Impact Analysis Areas**

- Legend**
- Indirect Impacts Analysis Area (i.e., Project Study Area)
  - Visual and Noise Impacts Analysis Area
  - Nuiqsut



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NAD 1983 StatePlane Alaska 4 FIPS 5004 Feet

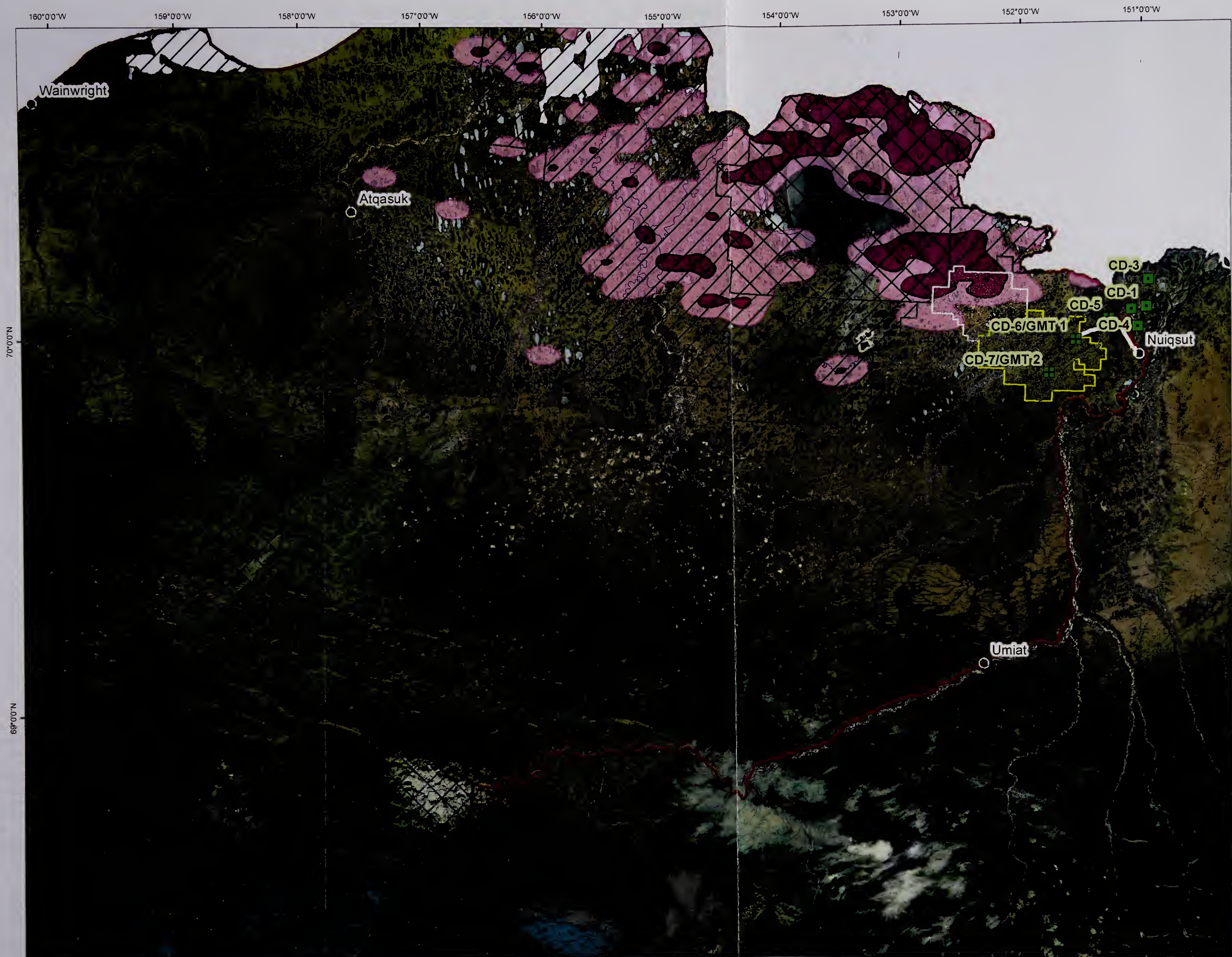


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Map 3.3-12

## Caribou Summer Areas

### Teshekpuk Lake Caribou Herd Mosquito Relief Areas

(1990-2010 Satellite Telemetry Data)

1-15 July

Kernel Density Analysis - Density Contour

- 50 %
- 95 %

### Western Arctic Caribou Herd Summer Line Density

(1988 - 2010)

- 1-2 movement lines crossing each 200 sq mi grid
- >2 movement lines crossing each 200 sq mi grid

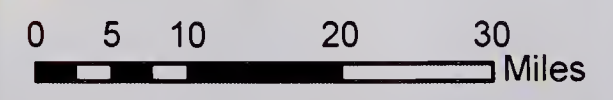
### Oil & Gas Leasing

- Unavailable
- Unavailable- no new non-subsistence infrastructure
- Greater Mooses Tooth Unit
- Bears Tooth Unit

### CONOCO PHILLIPS

- Existing Facility
- Proposed Facility
- Proposed Roads

NPR-A Boundary



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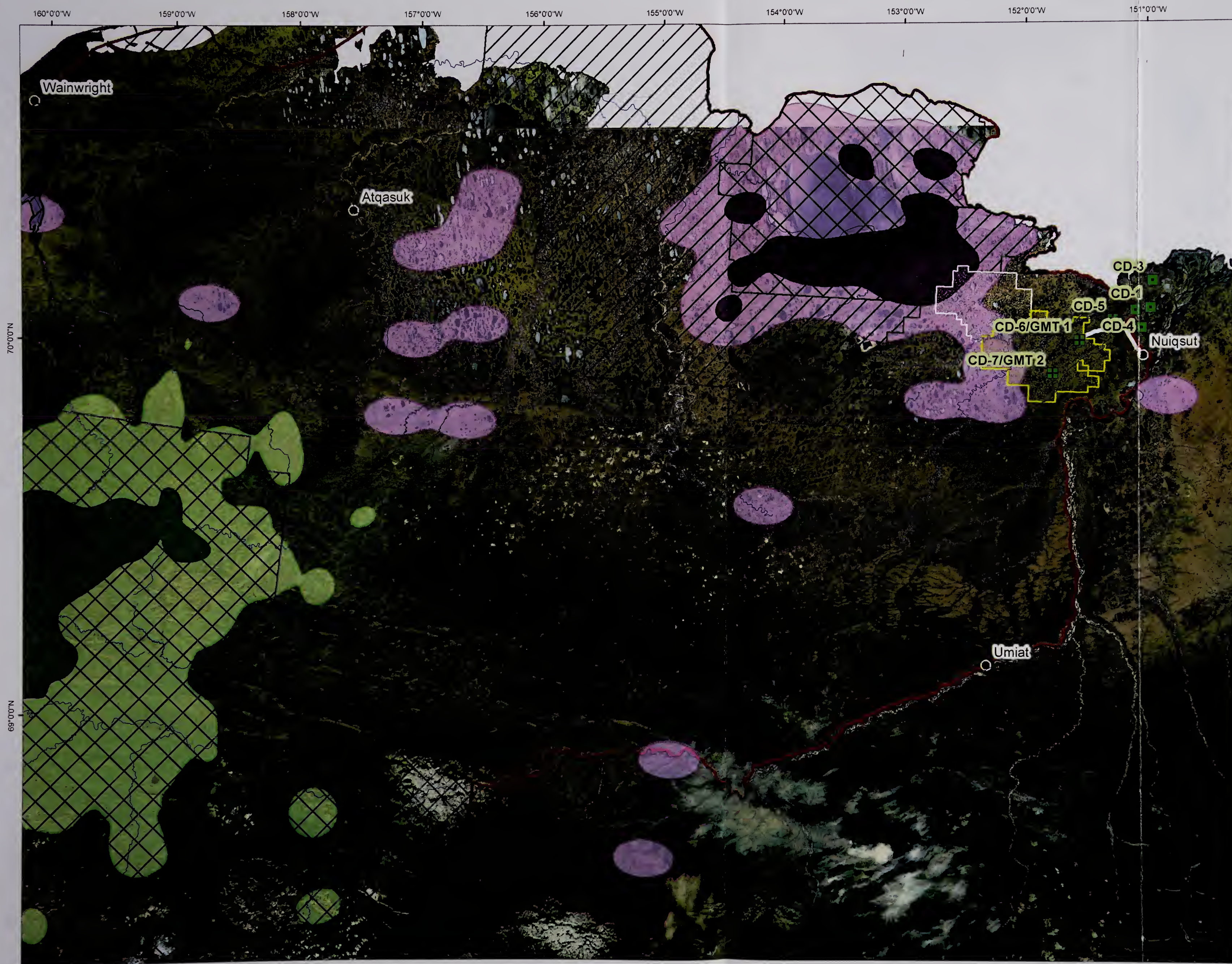
NAD 1983 StatePlane Alaska 4 FIPS 5004 Feet



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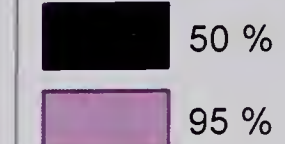


Map 3.3 -13

## Caribou Calving Areas

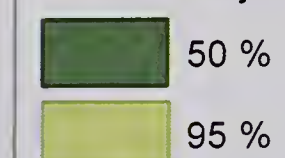
### Teshekpuk Lake Caribou Herd Calving Areas

(1990-2010 Satellite Telemetry Data)  
Successful Females Only, 1-15 July  
Kernel Density Analysis - Density Contour

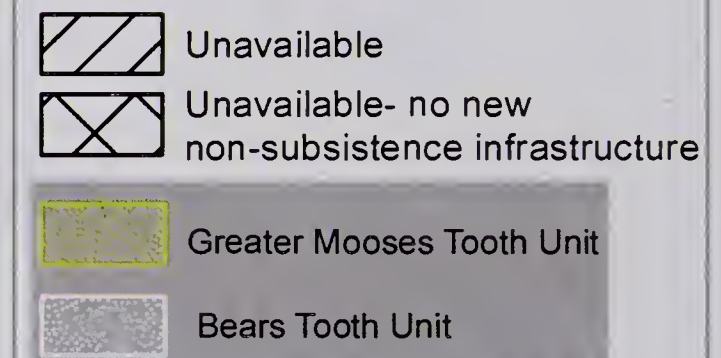


### Western Arctic Caribou Herd Calving Areas

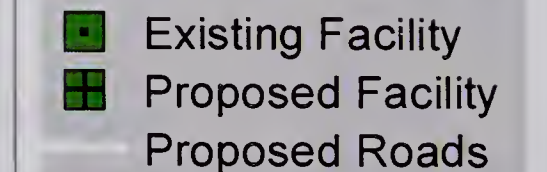
(1987 - 2010, excluding 1990-1991)  
Kernel Density Analysis - Density Contour



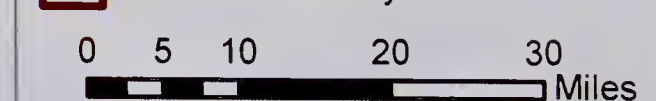
### Oil & Gas Leasing



### CONOCO PHILLIPS



### NPR-A Boundary



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NAD 1983 StatePlane Alaska 4 FIPS 5004 Feet



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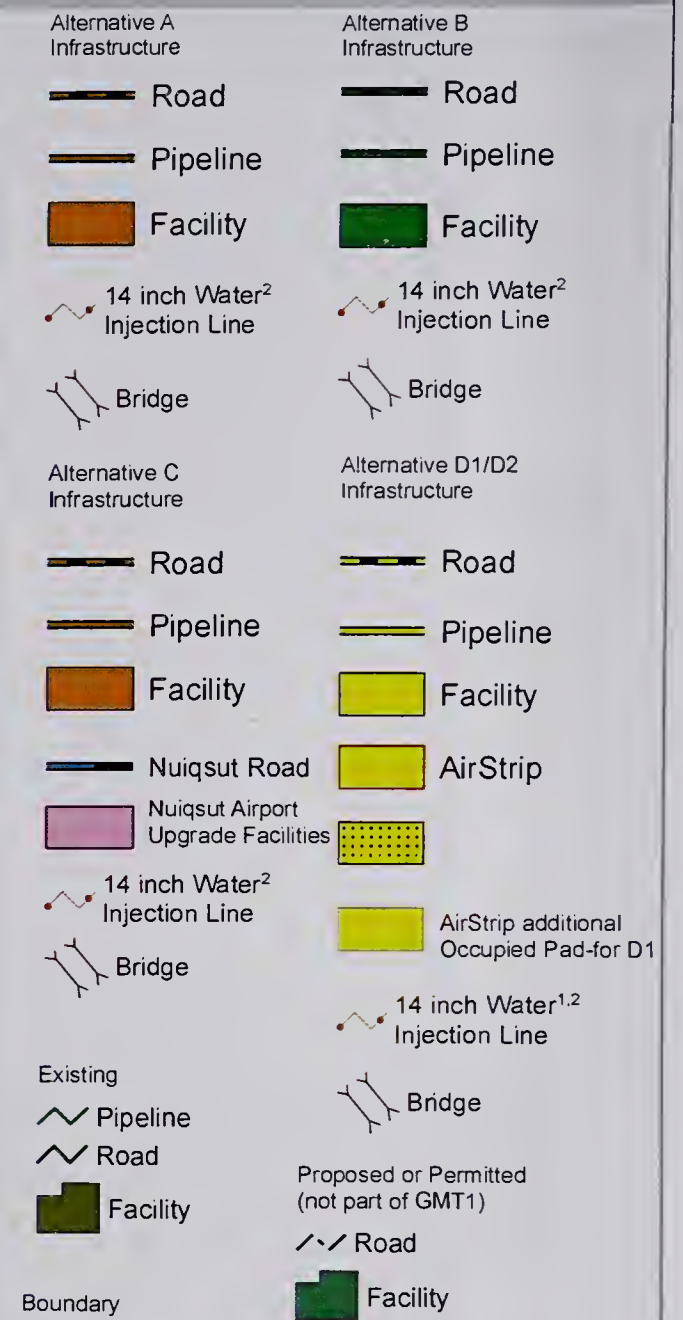
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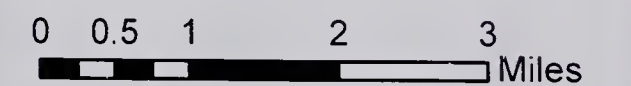


Map 3.3-14

### Polar Bear Habitat



Date: 10/21/2014



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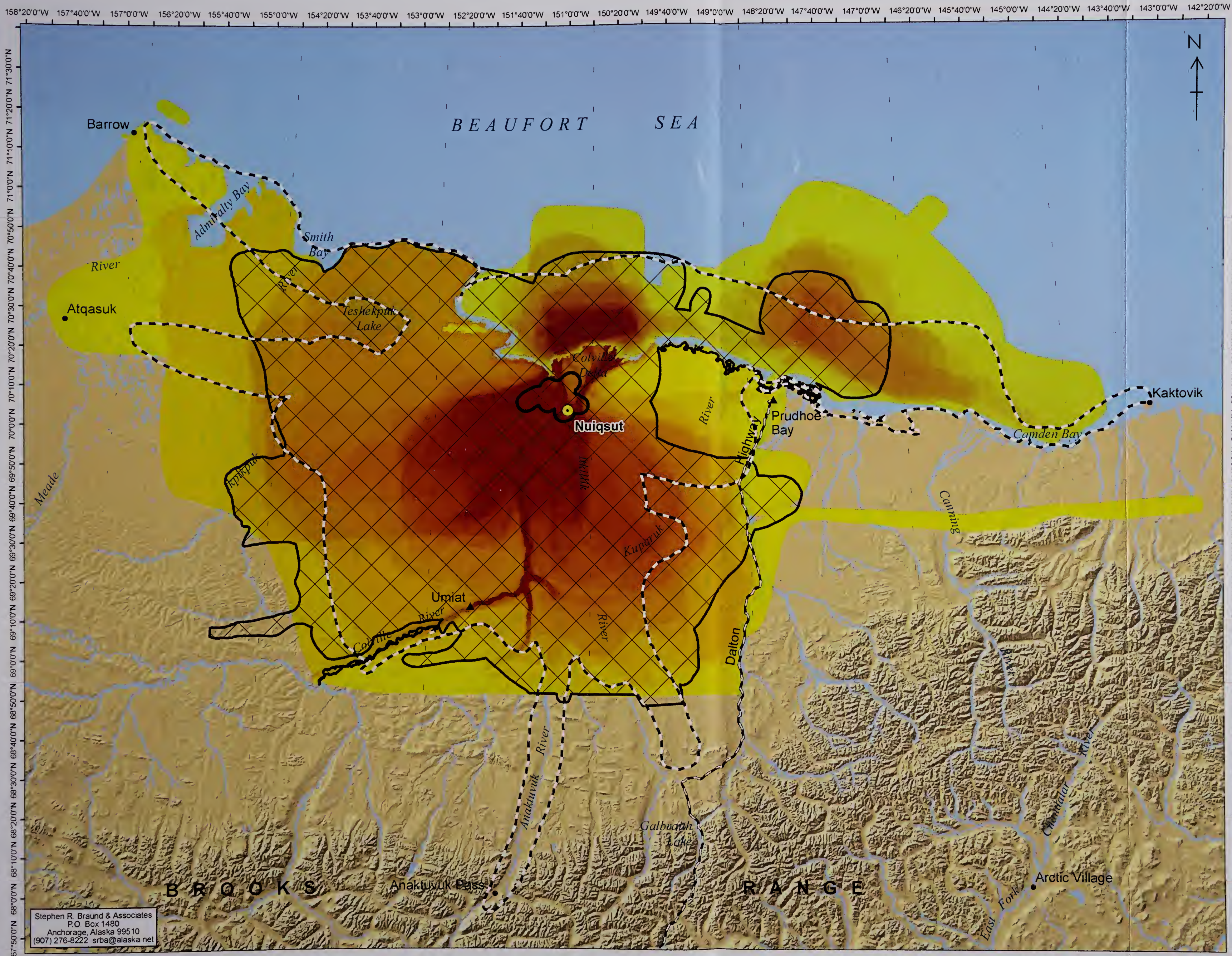
NAD 1983 StatePlane Alaska 4 FIPS 5004 Feet



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Map 3.4-1

### Nuiqsut Contemporary Subsistence Use Areas, All Resources

Legend

- All Resources, 1973-1986 (Source: Pedersen 1986)
- All Resources, 1994-2003 (Source: SRBA 2003)

Nuiqsut Combine Subsistence Use Areas

- Heavy Use
- Moderate Use

Project Study Area

Date: 12/6/2013

0 5 10 20 30 Miles

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NAD 1983 StatePlane Alaska 4 FIPS 5004 Feet

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Map 3.4-2

# Nuiqsut Caribou Subsistence Use Areas, 2008-2011

## Legend

Caribou Subsistence Use Areas

Heavy Use  
Moderate Use

Project Study Area

Date: 12/6/2013

0 5 10 20 30  
Miles

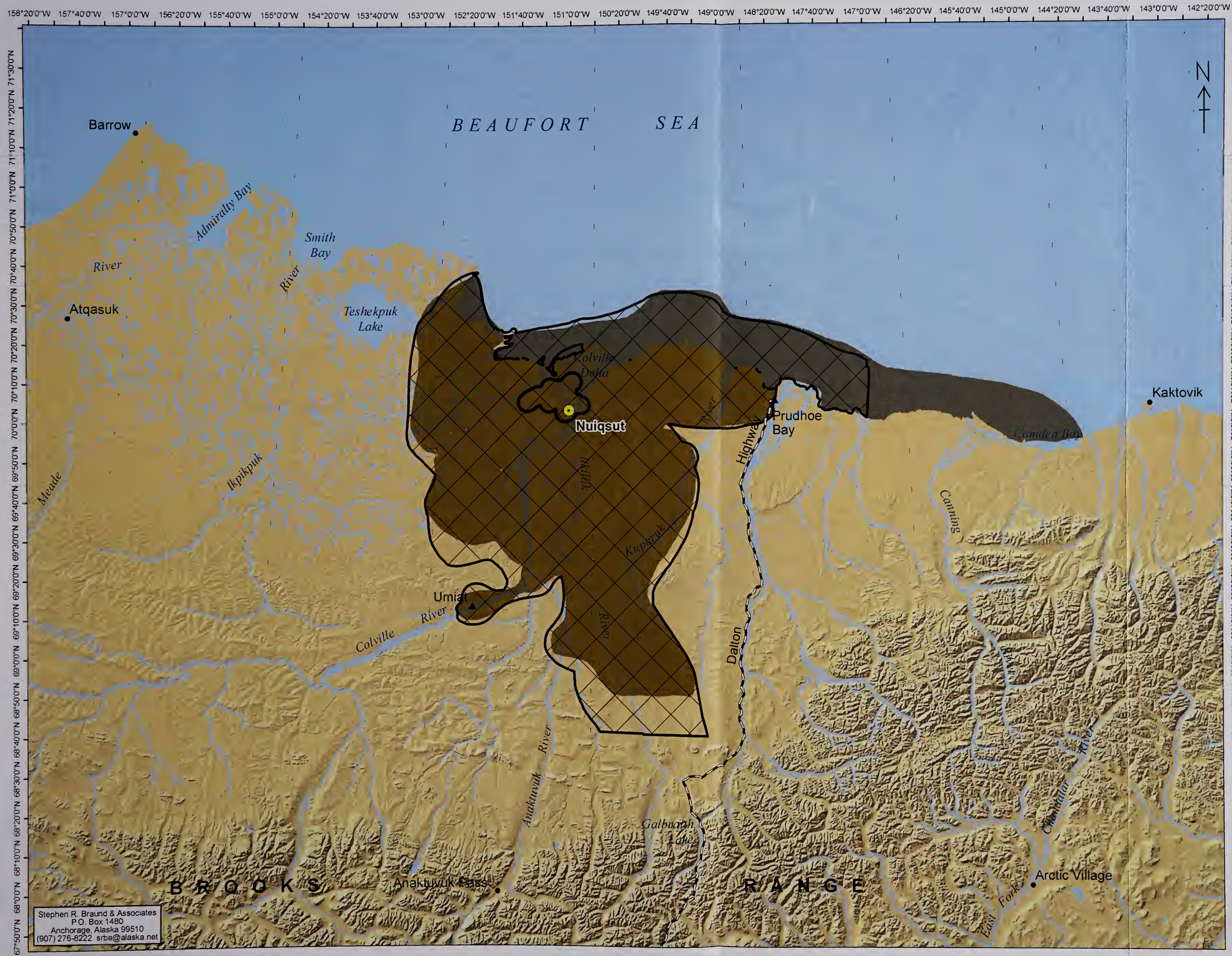
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NAD 1983 StatePlane Alaska 4 FIPS 5004 Feet



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Map 3.4-3

### Nuiqsut Historic and Lifetime Subsistence Use Areas, All Resources

- Legend
- All Resources, Lifetime (Source: Pedersen 1979)
  - All Resources, Early 1970s (Source: Brown 1979)
  - Project Study Area
  - Subsistence Study Community
  - Other Community
  - Other Place

Date: 12/6/2013

0 5 10 20 30 Miles

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NAD 1983 StatePlane Alaska 4 FIPS 5004 Feet

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Map 4.2-1

# Water Resources Near the GMT1 Pad

Alternative A  
Infrastructure

- Road
- Pipeline
- Facility

Alternative B  
Infrastructure

- Road
- Pipeline
- Facility

Alternative C  
Infrastructure

- Road
- Pipeline
- Facility

Alternative D1/D2  
Infrastructure

- Pipeline
- Road
- Facility
- AirStrip
- AirStrip Occupied Pad-D1
- AirStrip Occupied Pad-D 2

Setback Area  
Fish Creek 3mi

Date: 9/27/2014

0 400 800 1,600 2,400 Feet

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NAD 1983 StatePlane Alaska 4 FIPS 5004 Feet



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Footnote:  
1: Pipeline includes a 2 inch diesel line & 2 inch waterline from CD1 to GMT1  
2: 14 inch Water Injection line from CD1/APF to CD4N will be constructed on a new pipe rack. From CD4N to CD5 the 14-inch Water Injection line will be placed on the already proposed or permitted pipe rack (not part of GMT1).



151°40'0"W

151°20'0"W

151°0'0"W

70°20'0"N

70°20'0"N

70°10'0"N

70°10'0"N

Map 4.2-2

### Alternatives A and C Potential Inundation Analysis

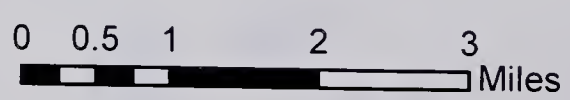
- |   |   |
|---|---|
| <b>Alternative A Infrastructure</b>       | <b>Proposed or Permitted (not part of GMT1)</b> |
| Road                                      | Pipeline  |
| Pipeline                                  | Road  |
| Facility                                  | Facility  |
| 14 inch Water <sup>1</sup> Injection Line | <b>Existing</b>                                 |
| Bridge                                    | Pipeline  |
|   | Road  |
|   | Facility  |

- Boundaries**
- NPR-A
  - Project Study Area
  - Drainage Basins

- Potential Inundation Area**
- Decreased Inundation Area
  - Potential Inundation Area

Footnote:  
1: 14 inch Water Injection line from CD1/APF to CD4N will be constructed on a new pipe rack. From CD4N to CD5 the 14-inch Water Injection line will be placed on the already proposed or permitted pipe rack (not part of GMT1).

Date: 9/29/2014



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NAD 1983 StatePlane Alaska 4 FIPS 5004 Feet



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Map 4.2-3

Alternative B  
Potential  
Inundation Analysis

Alternative B Infrastructure

Road

Pipeline

Facility

14 inch Water<sup>1</sup> Injection Line

Bridge

Existing Pipeline

Existing Road

Existing Facility

Proposed or Permitted (not part of GMT1)

Pipeline

Road

Facility

Boundary

Drainage Basin

Project Study Area

NPR-A

Potential Inundation Area

Decreased Inundation Area

Potential Inundation Area

NOTE: ROUGH ORDER OF MAGNITUDE ESTIMATE OF MAXIMUM INUNDATION

Footnote:

1: 14 inch Water Injection line from CD1/APF to CD4N will be constructed on a new pipe rack. From CD4N to CD5 the 14-inch Water Injection line will be placed on the already proposed or permitted pipe rack (not part of GMT1).

Draft Date: 9/28/2014

0 0.5 1 2 3

Miles

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NAD 1983 StatePlane Alaska 4 FIPS 5004 Feet

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Map 4.2-4  
Alternatives D1 and D2  
Potential Inundation Analysis

- | Alternative D1/D2 Infrastructure            | Proposed or Permitted (not part of GMT1) |
|---|--|
| Road  | Pipeline                                 |
| Pipeline                                    | Road                                     |
| Facility                                    | Facility                                 |
| Facility                                    | Existing                                 |
| Facility                                    | Pipeline                                 |
| Facility                                    | Road                                     |
| Facility                                    | Facility                                 |
| 14 inch Water <sup>1,2</sup> Injection Line | Boundary                                 |
| Bridge                                      | Drainage Basin                           |
|   | Project Study Area                       |
|   | NPR-A                                    |

- Potential Inundation Area
- Decreased Inundation Area
  - Potential Inundation Area

NOTE: ROUGH ORDER OF MAGNITUDE  
ESTIMATE OF MAXIMUM INUNDATION

Footnote:  
1. Pipeline includes a 2 inch diesel line & 2 inch waterline from CD1 to GMT1  
2. 14 inch Water Injection line from CD1/APF to CD4N will be constructed on a new pipe rack. From CD4N to CD5 the 14-inch Water Injection line will be placed on the already proposed or permitted pipe rack (not part of GMT1).

Date: 9/29/2014

0 0.5 1 2 3 Miles

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NAD 1983 StatePlane Alaska 4 FIPS 5004 Feet



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151°20'0"W



# Map 4.2-5 Road and Pipeline Crossings: Tijmiasigvik (Ublutuocho) River, Crea Creek and Barely Creek

| Alternative A<br>Infrastructure | Alternative B<br>Infrastructure     |
|---------------------------------|-------------------------------------|
| Road                            | Road                                |
| Pipeline                        | Pipeline                            |
| Pipeline Valvepad               | Facility                            |
| Bridge                          | Bridge                              |
|                                 | Pipeline Valvepad                   |
| Alternative C<br>Infrastructure | Alternative D1/D2<br>Infrastructure |
| Road                            | Pipeline                            |
| Pipeline                        | Pipeline Valvepad                   |
| Pipeline Valvepad               | Bridge                              |
| Bridge                          |                                     |

Setback Area  
 Fish Creek 3mi  
 Ublutuocho River 0.5mi

Date: 10/21/2014  
 0 0.125 0.25 0.5 0.75  
 Miles

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NAD 1983 StatePlane Alaska 4 FIPS 5004 Feet

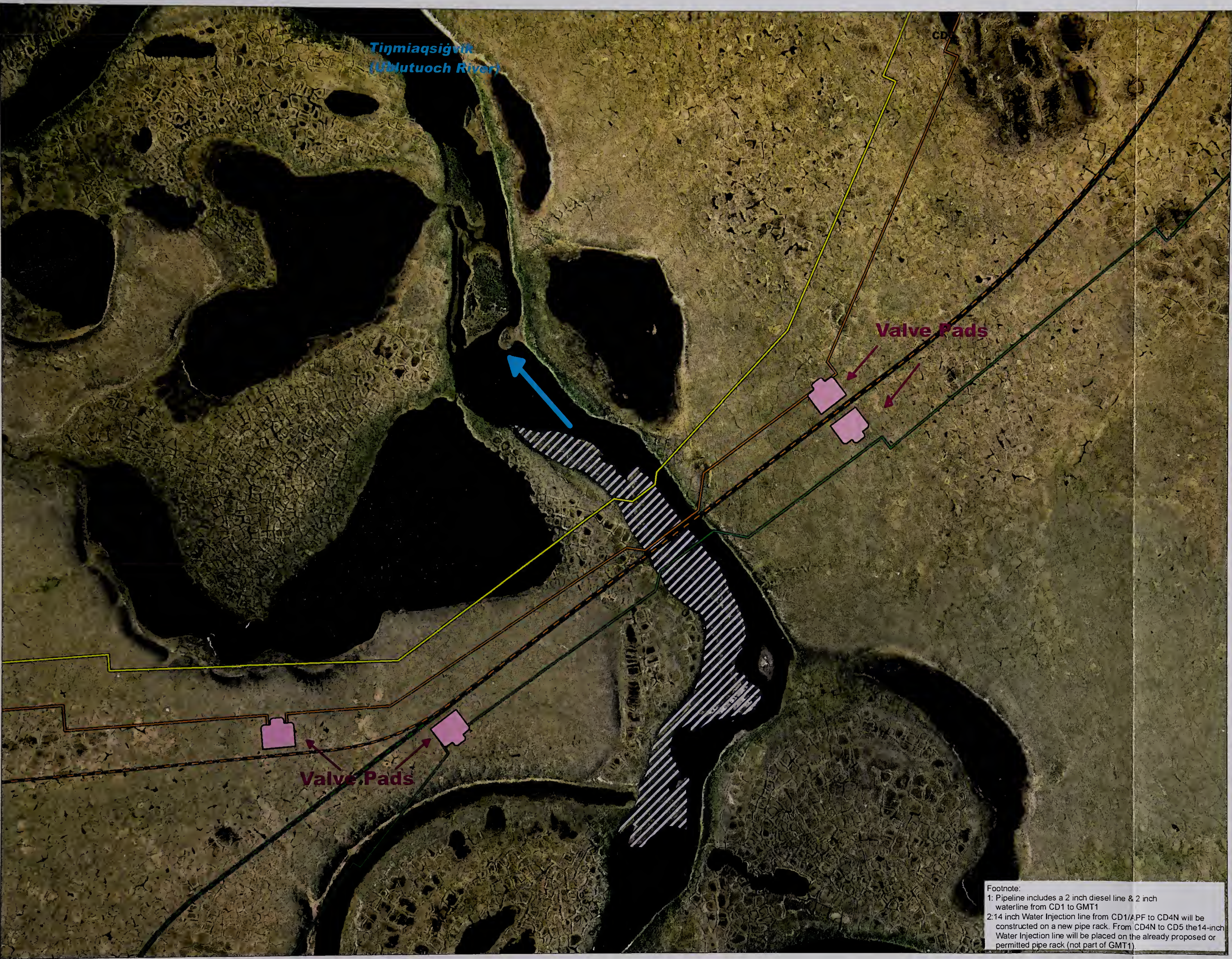


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Map 4.2-6  
Road and Pipeline Crossings:  
Tinmiaqsigvik (Ublutuooh)  
River Crossing

| Alternative A Infrastructure | Alternative B Infrastructure |
|------------------------------|------------------------------|
| Road                         | Road                         |
| Pipeline                     | Pipeline                     |
| Pipeline Valvepad            | Pipeline Valvepad            |

| Alternative C Infrastructure | Alternative D1/D2 Infrastructure |
|------------------------------|----------------------------------|
| Road                         | Pipeline                         |
| Pipeline                     | Pipeline Valvepad                |
| Pipeline Valvepad            |                                  |

- Hydrology
- Water Flow Direction of Gradient
  - Lower Flood Plain Area

Date: 9/29/2014

0 140 280 560 840 Feet

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NAD 1983 StatePlane Alaska 4 FIPS 5004 Feet

Footnote:  
1: Pipeline includes a 2 inch diesel line & 2 inch waterline from CD1 to GMT1  
2: 14 inch Water Injection line from CD1/APF to CD4N will be constructed on a new pipe rack. From CD4N to CD5 the 14-inch Water Injection line will be placed on the already proposed or permitted pipe rack (not part of GMT1).



151°20'0"W



Map 4.2-7

# Crea Creek and Barely Creek Drainage Basins

| Alternative A Infrastructure | Alternative B Infrastructure     |
|------------------------------|----------------------------------|
| Road                         | Road                             |
| Pipeline                     | Pipeline                         |
| Bridge                       | Bridge                           |
| Alternative C Infrastructure | Alternative D1/D2 Infrastructure |
| Road                         | Pipeline                         |
| Pipeline                     | AirStrip                         |
| Bridge                       | Bridge                           |

## Creek\_Drainage

- Barely Creek Drainage
- Crea Creek Drainage
- S6 Drainage Basin

Direction of water flow

Date: 9/27/2014

0 0.125 0.25 0.5 0.75 Miles

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NAD 1983 StatePlane Alaska 4 FIPS 5004 Feet



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Footnote:  
1: Pipeline includes a 2 inch diesel line & 2 inch waterline from CD1 to GMT1  
2: 14 inch Water Injection line from CD1/APF to CD4N will be constructed on a new pipe rack. From CD4N to CD5 the 14-inch Water Injection line will be placed on the already proposed or permitted pipe rack (not part of GMT1).







151°40'0"W

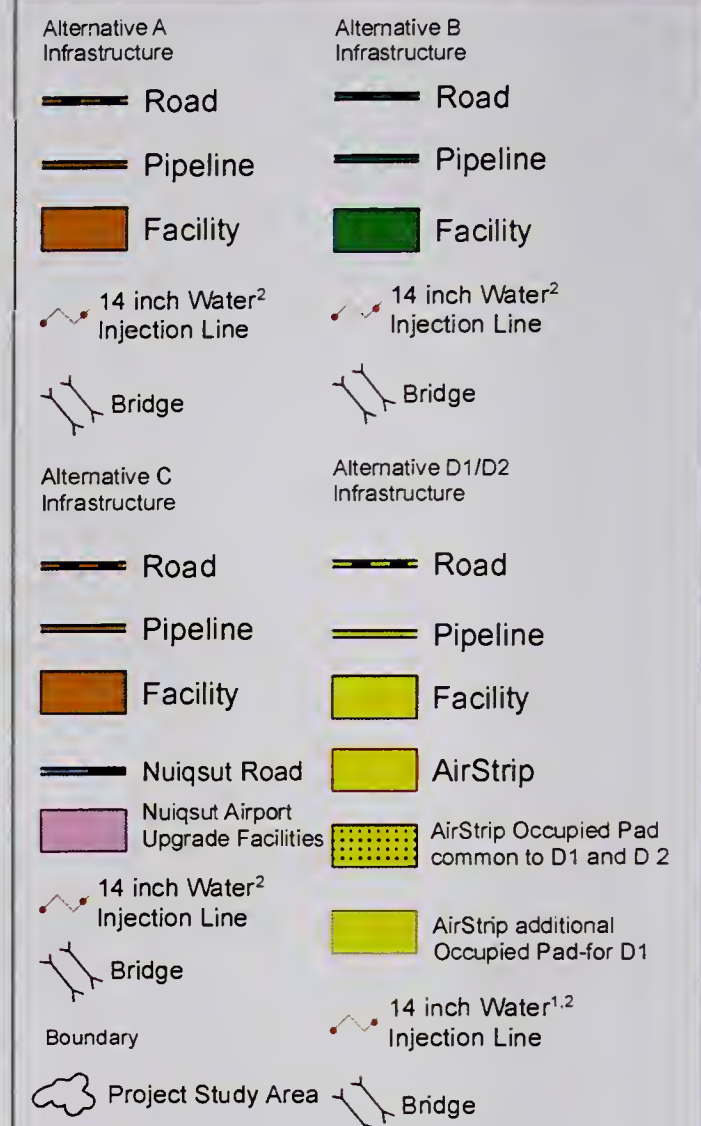
151°20'0"W

151°0'0"W

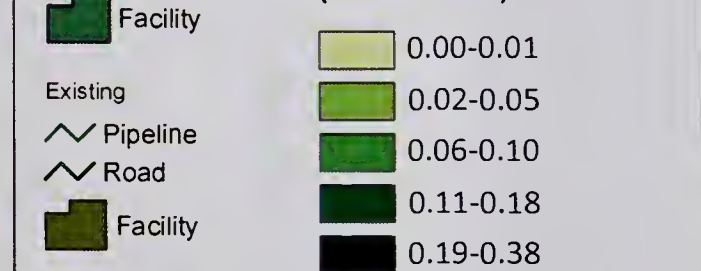
70°20'0"N

Map 4.3-2

# Yellow-billed Loon Estimated Relative Onshore Density within the Project Study Area, 1993-2010

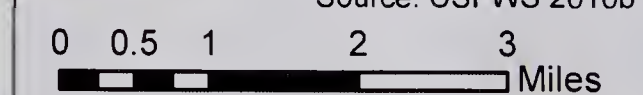


## **Yellow Billed Loons Estimated Relative Onshore Density (1993-2010)**



Date: 9/29/2014

Source: USFWS 2010b



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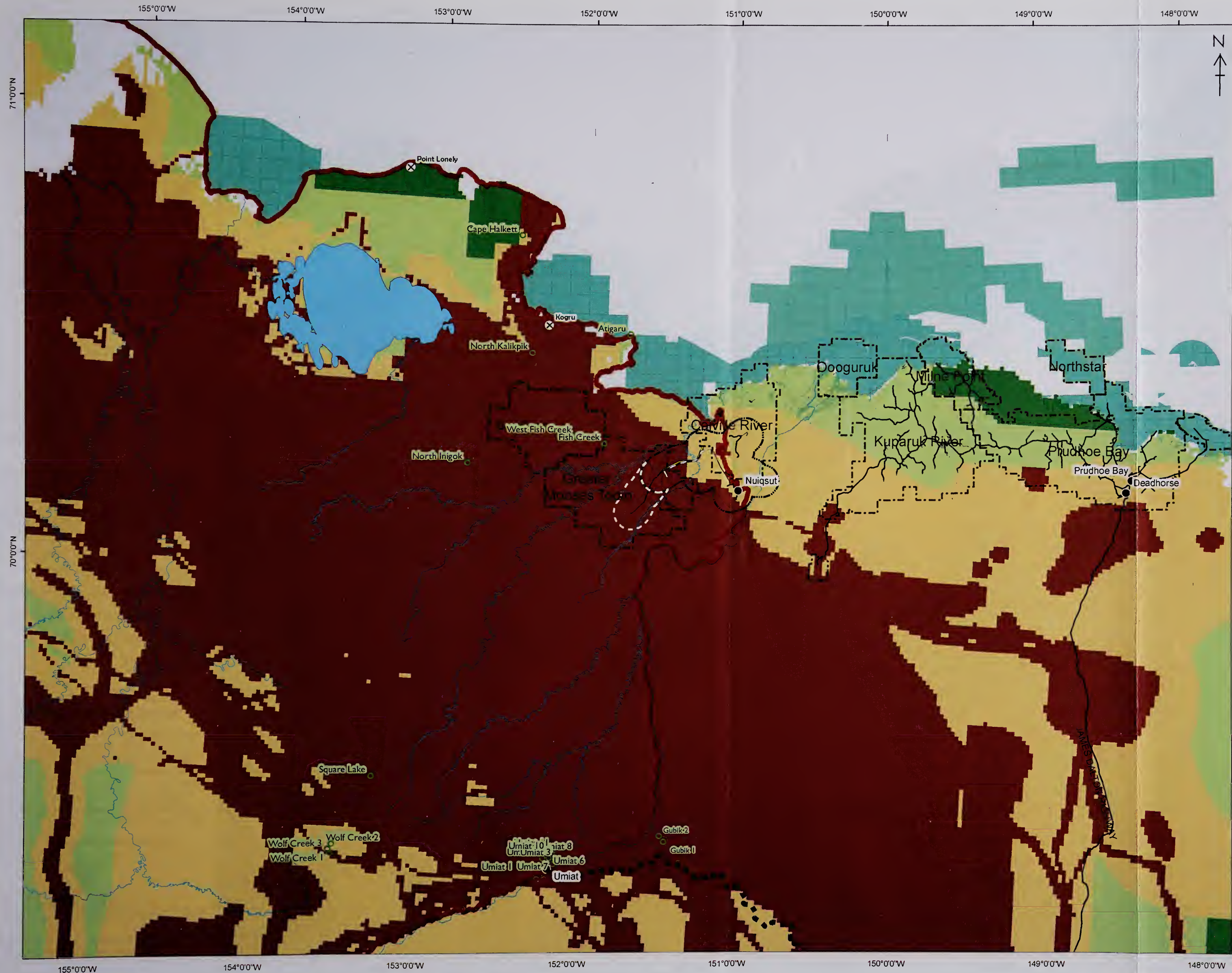
### Footnote:

1: Pipeline includes a 2 inch diesel line & 2 inch waterline from CD1 to GMT1

2: 14 inch Water Injection line from CD1/APF to CD4N will be constructed on a new pipe rack. From CD4N to CD5 the 14-inch Water Injection line will be placed on the already proposed or permitted pipe rack (not part of GMT1).

70°10'0"N





Map 4.3-3

### Teshekpuk Caribou Herd Females: Fall Migration Movements Relative to Potential New Infrastructure

**Teshekpuk Caribou Herd Males Fall Migration Movements**  
Brownian Bridge Analysis

- Low use
- Moderately-low use
- Moderately-high use
- High use

Data analysis by Lincoln Parrett of ADF&G  
Data gathered cooperatively by ADF&G, NSB, and BLM

**Existing Oil & Gas Infrastructure**

- Above Ground
- Existing Facility
- Oil & Gas Unit

**Proposed Infrastructure**

| GMT-1 Alt. A      | GMT-2    |
|-------------------|----------|
| Pipeline          | Road     |
| Access Road       | Pipeline |
| Nuiqsut Spur Road |          |

**GMT1 SEIS Project Areas**

- Project Study Area
- GMT2 2.5-Mile Buffer

- Proposed Foothills West Route (Road to Umiat)
- Offshore Leases- BOEM
- Offshore Leases- State of Alaska
- Formerly Used Military Sites
- Legacy Wells NPR-A
- NPR-A

0 4 8 16 24 Miles

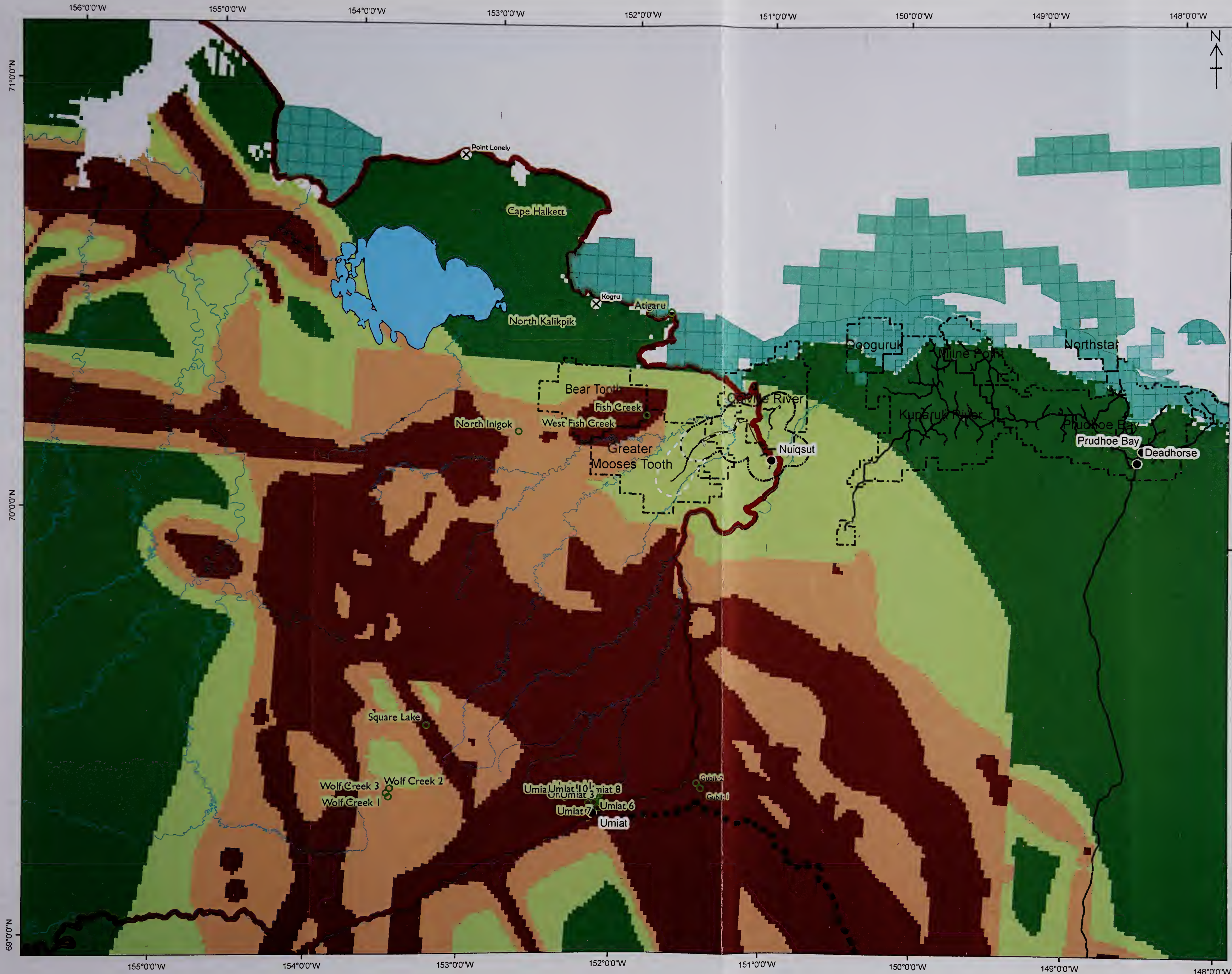
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NAD 1983 StatePlane Alaska 4 FIPS 5004 Feet

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Map 4.3-4

Teshekpuk Caribou  
Herd Males: Fall  
Migration Movements  
Relative to Potential  
New Infrastructure

Teshekpuk Caribou Herd  
Males Fall Migration Movements  
Brownian Bridge Analysis

Low use

Moderately-low use

Moderately-high use

High use

Data analysis by Lincoln Parrett of ADF&G

Data gathered cooperatively by ADF&G, NSB, and BLM

Existing Oil & Gas Infrastructure

Above Ground

Existing Facility

Oil & Gas Unit

Proposed Infrastructure

GMT-1 Alt. A

GMT-2

Pipeline

Road

Access Road

Pipeline

Nuiqsut Spur Road

GMT1 SEIS Project Areas

Project Study Area

GMT2 2.5-Mile Buffer

Proposed Foothills West Route (Road to Umiat)

Offshore Leases- BOEM

Offshore Leases- State of Alaska

Formerly Used Military Sites

Legacy Wells NPR-A

NPR-A

0 4 8 16 24

Miles

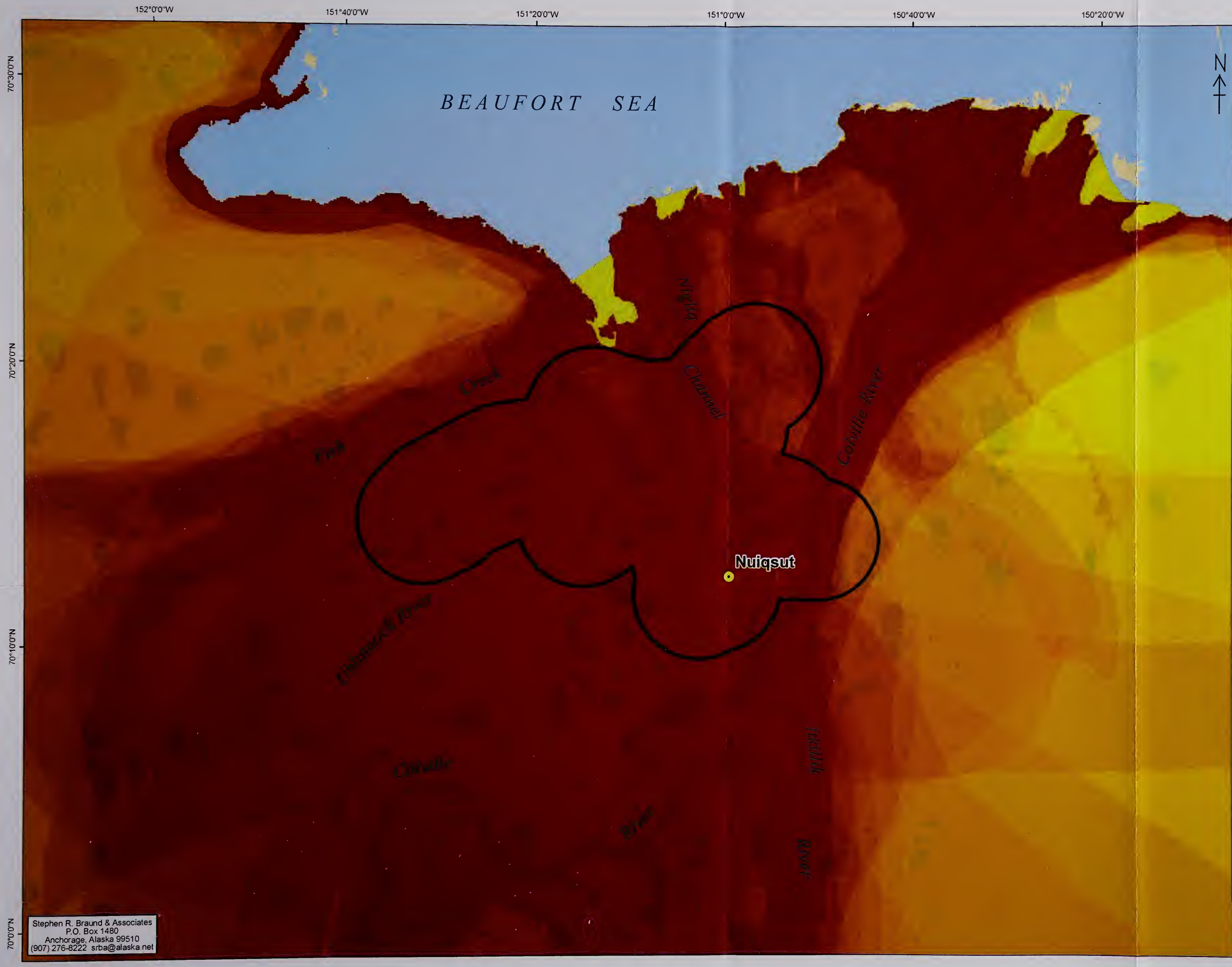
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NAD 1983 StatePlane Alaska 4 FIPS 5004 Feet

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Map 4.4-1  
Caribou Subsistence Use Areas In  
The Project Study Area, 1995-2006

Legend

High  
Low  
Overlapping Subsistence Use  
Areas, Caribou, 1995-2006  
(Source: SRBA 2010a)

In Nuiqsut, 94 caribou use areas  
were reported by 32 respondents.  
Use areas extend beyond the  
extent of this map.

Project Study Area  
Subsistence Study Community

0 1 2 4 6  
Miles

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NAD 1983 StatePlane Alaska 4 FIPS 5004 Feet

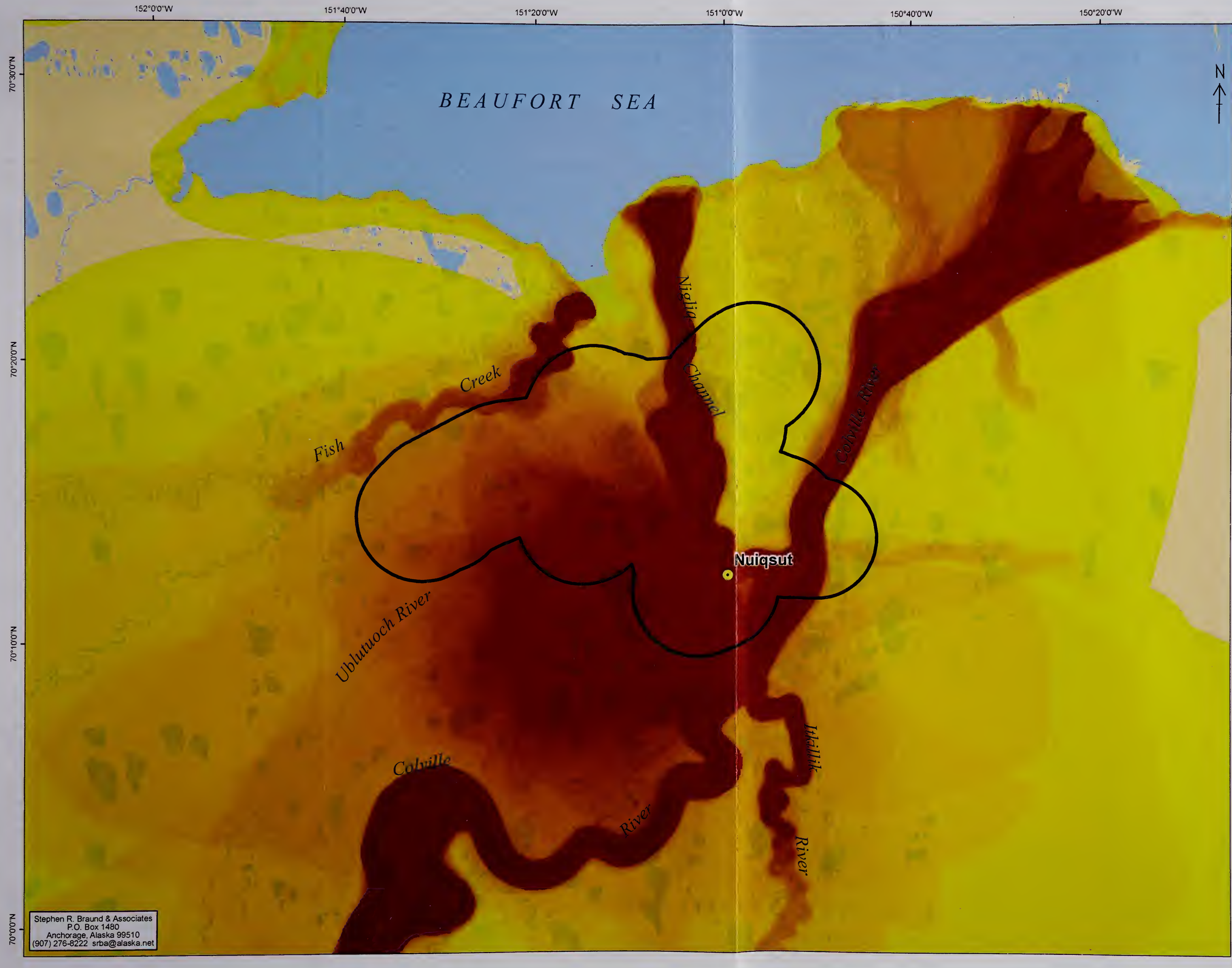


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
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Anchorage, Alaska 99510  
(907) 276-8222 srba@alaska.net






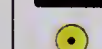
Map 4.4-2  
Caribou Subsistence Use Areas In  
The Project Study Area, 2008-2011

Legend

 High  
 Low  
Overlapping Subsistence Use  
Areas, Caribou, 2008-2011

Source: SRBA 2010b, 2011a,  
2012, 2013b

SRB&A interviewed 96 active  
harvesters from March 2009 through  
November of 2011. The harvesters  
reported 731 use areas. Use areas  
extend beyond the extent of this map.

 Project Study Area  
 Subsistence Study Community

Date: 12/9/2013

0 1 2 4 6  
Miles

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NAD 1983 StatePlane Alaska 4 FIPS 5004 Feet



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152°0'0"W 151°40'0"W 151°20'0"W 151°0'0"W 150°40'0"W 150°20'0"W

70°30'0"N  
70°20'0"N  
70°10'0"N  
70°0'0"N

BEAUFORT SEA



70°30'0"N  
70°20'0"N  
70°10'0"N  
70°0'0"N

Map 4.4-3  
Geese Subsistence Use Areas in the Project Study Area, 1995-2006

Legend  
 Overlapping Subsistence Use Areas, Geese, 1995-2006  
(Source: SRBA 2010a)

In Nuiqsut, 179 geese use areas were reported by 33 respondents. Use areas extend beyond the extent of this map.

Project Study Area  
 Subsistence Study Community

Draft Date: 12/9/2013



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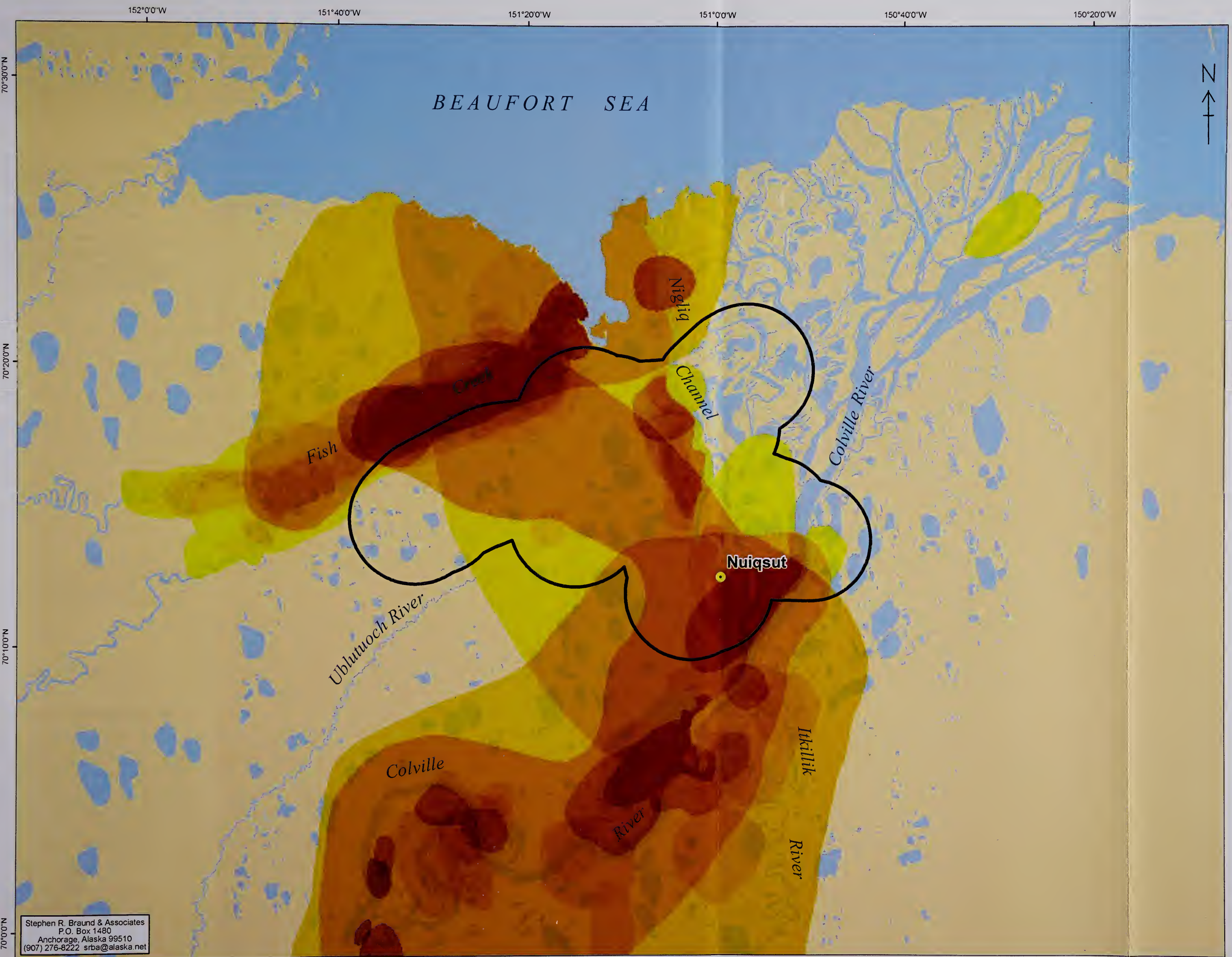
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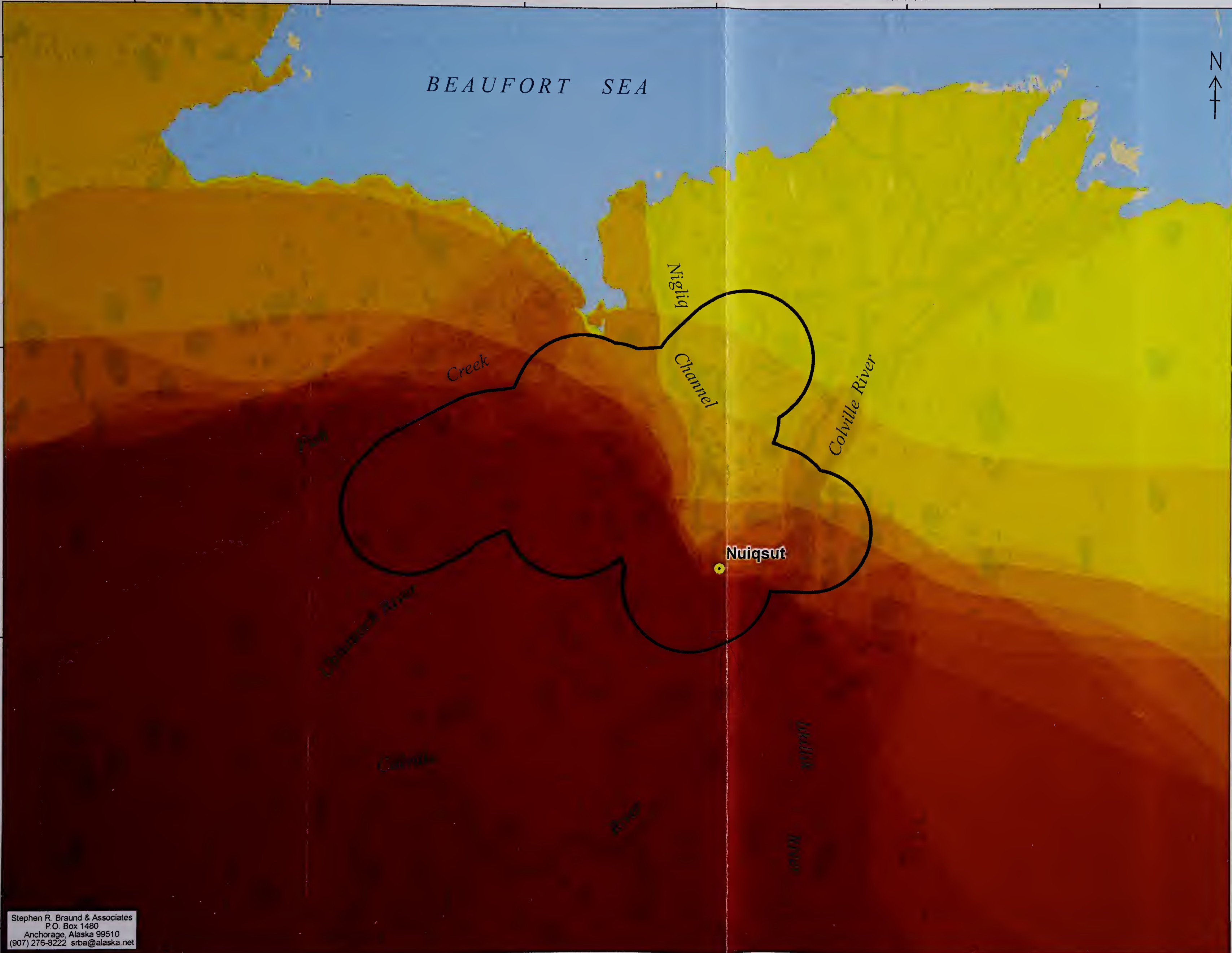
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152°0'0"W 151°40'0"W 151°20'0"W 151°0'0"W 150°40'0"W 150°20'0"W

70°30'0"N  
70°20'0"N  
70°10'0"N  
70°0'0"N



Map 4.4-4  
Wolf and Wolverine Subsistence  
Use Areas in the Project Study  
Area, 1995-2006

Legend  
High  
Low  
Overlapping Subsistence Use  
Areas, Wolf and Wolverine,  
1995-2006  
(Source: SRBA 2010a)

In Nuiqsut, 69 wolf and wolverine  
use areas were reported by  
24 respondents. Use areas extend  
beyond the extent of this map.

Project Study Area  
Subsistence Study Community

Draft Date: 12/9/2013

0 1 2 4 6  
Miles

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NAD 1983 StatePlane Alaska 4 FIPS 5004 Feet

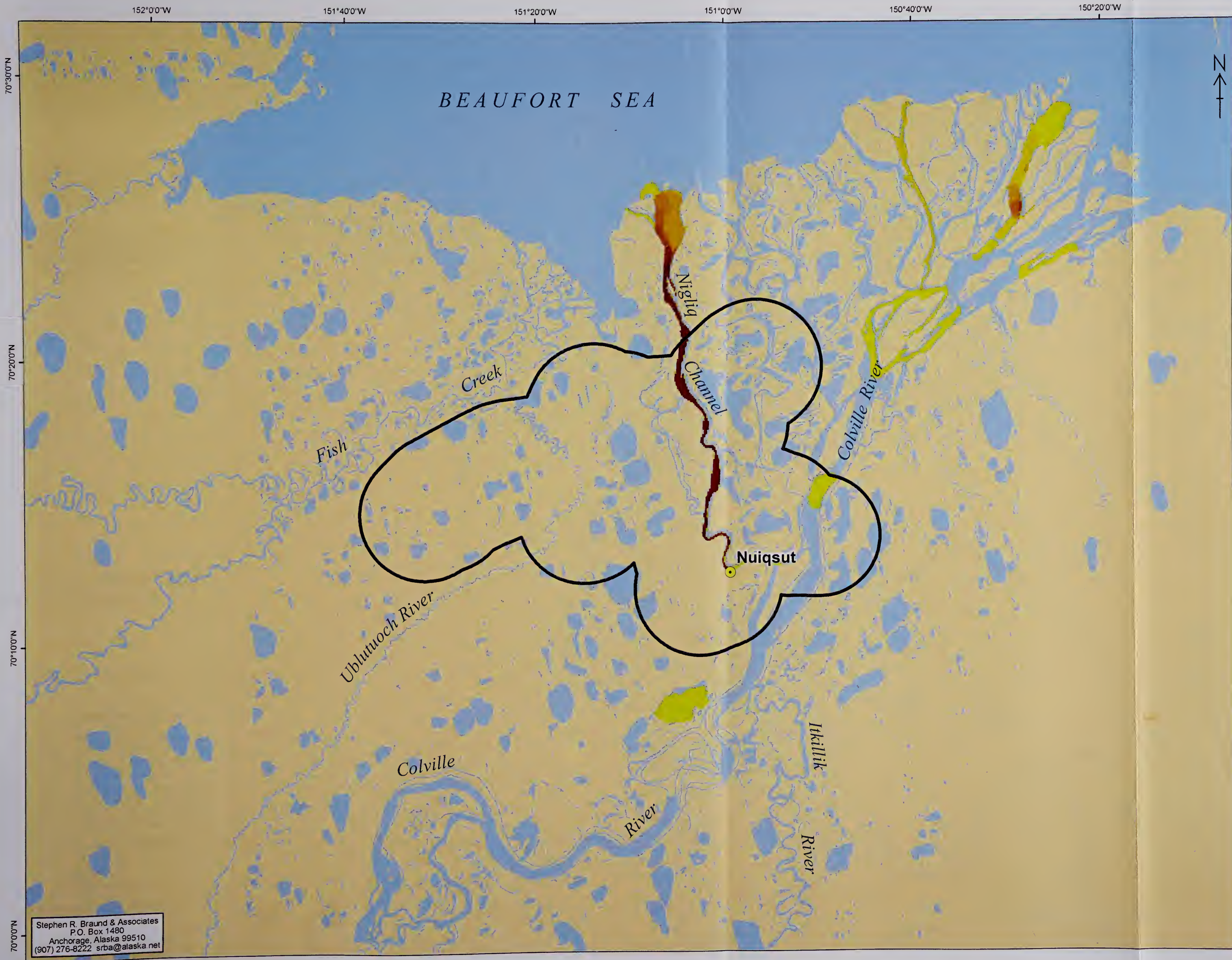


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Map 4.4-5

# Arctic Cisco Subsistence Use Areas in the Project Study Area, 1995-2006

## Legend

■ High  
■ Low  
 Overlapping Subsistence Use  
 Areas, Arctic Cisco, 1995-2006  
 (Source: SRBA 2010a)

In Nuiqsut, 66 Arctic Cisco use areas  
 were reported by 33 respondents.  
 Use areas extend beyond the  
 extent of this map.

Project Study Area  
● Subsistence Study Community

Draft Date: 12/9/2013

0 1 2 4 6 Miles

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NAD 1983 StatePlane Alaska 4 FIPS 5004 Feet



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152°0'0"W 151°40'0"W 151°20'0"W 151°0'0"W 150°40'0"W 150°20'0"W

70°30'0"N  
70°20'0"N  
70°10'0"N  
70°0'0"N



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Map 4.4-6  
Burbot Subsistence Use Areas in  
the Project Study Area, 1995-2006

Legend  
High  
Low  
Overlapping Subsistence Use  
Areas, Burbot, 1995-2006  
(Source: SRBA 2010a)

In Nuiqsut, 62 burbot use areas  
were reported by 30 respondents.  
Use areas extend beyond the  
extent of this map.

Project Study Area  
Subsistence Study Community

Draft Date: 12/9/2013

0 1 2 4 6  
Miles

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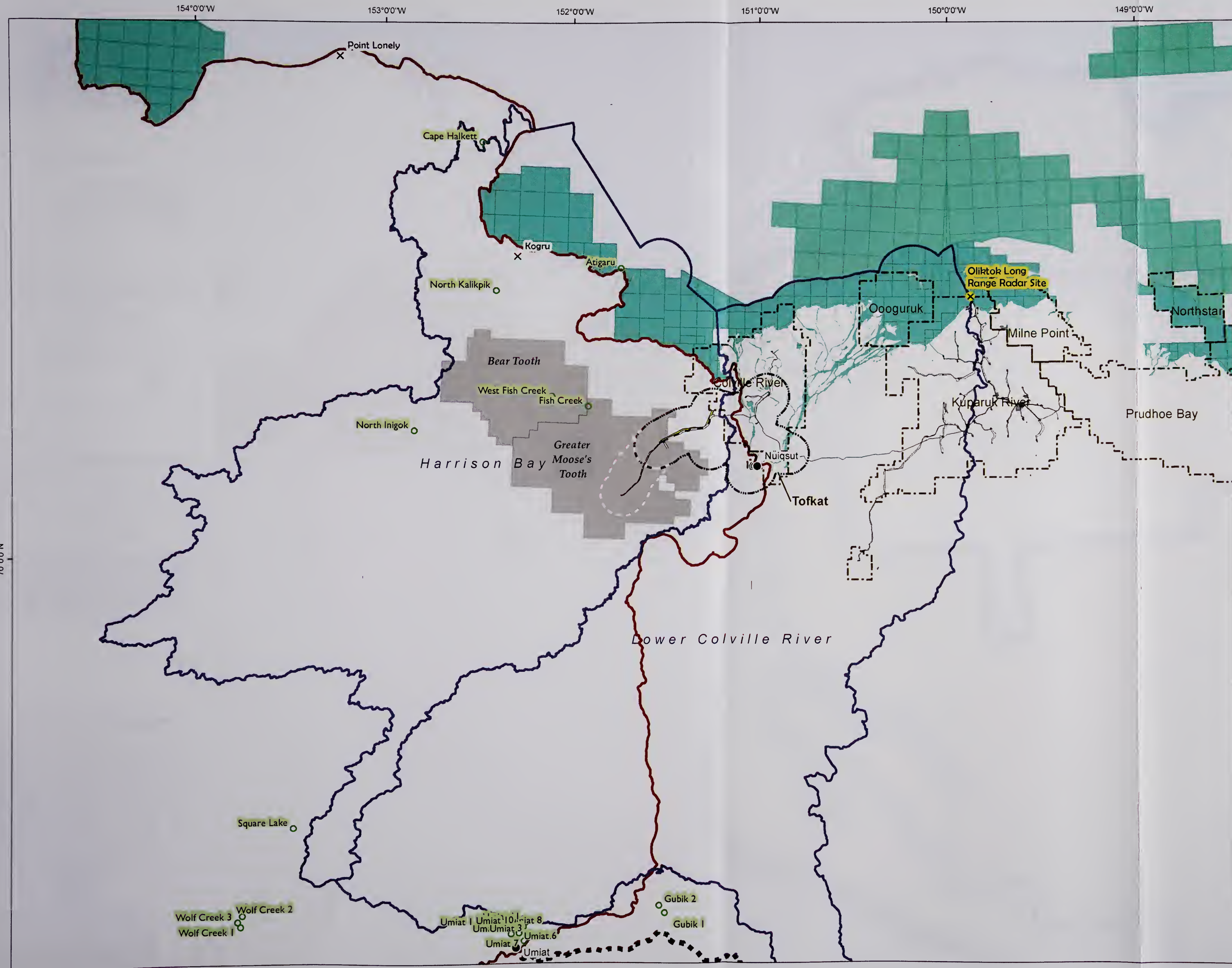
NAD 1983 StatePlane Alaska 4 FIPS 5004 Feet



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Map 4.6-1

## Oil & Gas Infrastructure

### Existing Oil & Gas Infrastructure

- Above Ground
- Existing Facility

### Oil & Gas Producing Units

Production Status

- Not Producing
- Producing

### Proposed Infrastructure

- |                     |            |
|---------------------|------------|
| GMT-1 Alt. A        | GMT-2      |
| — Pipeline          | — Road     |
| — Access Road       | — Pipeline |
| — Nuiqsut Spur Road |            |

### GMT1 SEIS Project Areas

- Project Study Area
- GMT2 2.5-Mile Buffer

- Proposed Foothills West Route (Road to Umiat)

- Offshore Leases- BOEM
- Offshore Leases- State of Alaska

- ✕ Active Military Site
- ✕ Formerly Used Military Sites
- Legacy Wells NPR-A

- Hydrologic Units (HUC8)

- NPR-A

0 6.5 13 19.5  
Miles

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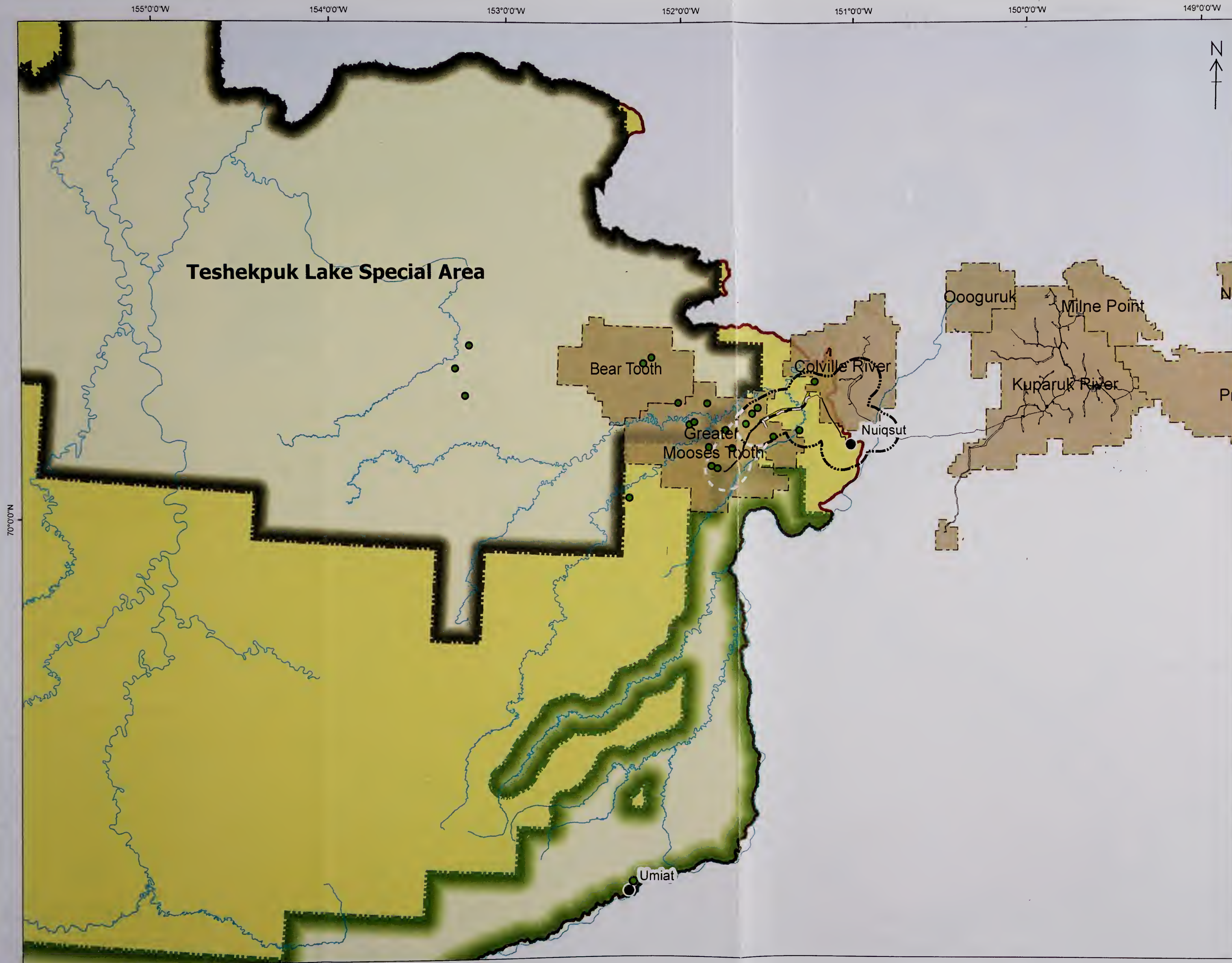
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Map 4.6-2

## Oil and Gas Exploratory Wells and NPR-A Special Areas

● Exploratory Well

### NPR-A Special Areas

Colville River Special Area  
Teshekpuk Lake Special Area

### Existing Oil & Gas Infrastructure

— Above Ground  
■ Existing Facility

### Oil & Gas Producing Units



### Proposed Infrastructure

GMT-1 Alt. A  
Pipeline  
Access Road  
Nuiqsut Spur Road

GMT-2  
Road  
Pipeline

### GMT1 SEIS Project Areas

Project Study Area  
GMT2 2.5-Mile Buffer

NPR-A

0 8 16  
Miles

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NAD 1983 StatePlane Alaska 4 FIPS 5004 Feet



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